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ABSTRACT

A study was conducted to explore the relationship between the working individual's daily experience on the job (job content) and his leisure activity, political participation, and mental strain after the workday is done. Based on individual level data from a representative national survey (1:1000 random sample) in Sweden in 1968, the study developed a model of social-psychological functioning which was used to test the hypothesis that the noneconomic qualities of work experience affect behavior during leisure. The first hypothesis of the model predicts how "active" and "passive" patterns of behavior might be socialized on the job. The second hypothesis predicts what combination of job characteristics should lead to mental strain. The model is measured by three broad types of work environment dimensions: Job demands, job discretion, and job social relationships. Findings indicated that the worker who lacks discretion over the content of his daily work experience is likely to be "passive" in leisure and political participation on the one hand, or to experience mental strain on the other. Findings do not suggest that psychologically demanding work is always accompanied by deleterious effects, although strain does occur when job discretion is simultaneously low. However, psychologically demanding work is associated with more socially active leisure and political participation when job discretion is also high. (Author/TA)

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THE IMPACT OF THE WORK ENVIRONMENT ON LIFE OUTSIDE THE JOB

by

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MS, Massachusetts Institute of Technology
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ABSTRACT

THE IMPACT OF THE WORK ENVIRONMENT ON LIFE OUTSIDE THE JOB

by

ROBERT ALLEN KARASEK, JR.

Submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Sociology and Labor Relations to the Interdepartmental Committee (see below) at Massachusetts Institute of Technology on May 24, 1976.

This study explores the relationship between the working individual's daily experience on the job(job content) and his leisure activity, political participation, and mental strain after the workday is done. The study is based on individual level data from a representative national survey in Sweden in 1968 (comparable U.S. data on job content and mental strain is available but is not analyzed in this report).

The study develops a model of "social-psychological functioning" (Kohn and Schooler, 1973) which is used to test the hypothesis that the non-economic qualities of work experience affect behavior during leisure. The first hypothesis of the model predicts how "active" and "passive" patterns of behavior might be"socialized" on the job. The second hypothesis predicts what combination of job characteristics should lead to mental strain. The model(summarized on p. 55) is measured by three broad types of work environment dimensions: Job Demands(which conditionally induce stress in the worker), Job Discretion (which measures the individual's mastery over the work environment), and Job Social Relationships (little data available here).

The data base is a 1:1000 random sample of the full adult Swedish population, although most tests are based on the male, non-rural work force. The job content measures available can be described as broad in coverage, but sometimes lacking in specific detail. To confirm the validity of the job content dimensions derived in this study, their distribution by subpopulations of industry category, social class, age and sex is reviewed. The leisure and political activity analyzed represents primarily active, societal level participation but does not cover a variety of less specific "relaxation" pastimes. The stability of leisure activity dimensions derived by factor analysis is reviewed in subpopulations of age, sex and social class, The mental strain indicators are self-reports of psychological problems (depression, sleeping problems), pill consumption, and related physical symptoms (high blood pressure)[These indicators are discussed in summary form only in this report].

The primary finding is that the worker's level of leisure and political activity is generally highly associated with "Activity Level" on the job (a summation of Job Demands and Job Discretion). This interaction is used to characterize behavior patterns on the job and during leisure as active or passive. We do not find evidence that the worker "compensates" for the problems of the work day during his leisure hours -- in relative terms. Behavior appears to "carry-over" from work to leisure. The association between active and passive work and "active" and "non-active" leisure increases for workers with more exposure to the work environment either in terms of years of experiences, or hours worked per week (for female workers).

Symptoms of mental strain are most highly correlated to a different interaction of Job Demands and Job Discretion: "unresolved strain." For workers with more freedom of action to cope with stress on the job, it is less likely that heavy job demands will be associated with mental strain (depression, anxiety, sleeping problems, pill consumption, tiredness, psychosomatic complaints). It is quite surprising (although consistent with the theory) that the interaction is almost independent of the "activity level" interaction.

The fact that mental strain and leisure activity patterns are not highly correlated in the male working population suggests why conventional indicators of occupation (such as status scales) which are unidimensional fail to discriminate a full range of job related behaviors. While nonparticipation and "mental strain" problems are both most severe at the lower end of the conventional status scale, these phenomena are associated with different job types, and delineate multiple, distinct disadvantaged populations.

Swedish data allow control for the effects of childhood experiences, social status and economic resources, life cycle and family situation, and some local social relationships. In general we find that the relationships above persist, but there are several qualifications. Status measures (often colinear) appear to account for about a third to a fourth of the observed associations in both full sample and work experience cohort stratified populations. These measures of family disposable income, education, and occupational social class appear to account for more of the work leisure association in the high status than in the low status populations. In addition, nonlinear, interactive modifications of the work-leisure associations occur for measure of problematic life events during childhood, and for strong associations with relatives. Furthermore, the lack of longitudinal data means that we cannot exclude the possibility that a job selection process accounts for the observed associations. However, our findings suggest that no such process which is related to the individual background data available would appear to account for the bulk of the work-leisure relationships. (for a summary of these findings see p. 289).

Without longitudinal or laboratory controlled data these findings must be considered suggestive, rather than conclusive. However, they have been demonstrated for an entire national workforce, and tested for a variety of alternative explanations. In summary, the worker who lacks discretion over the content of his daily work experience is likely to be "passive" in leisure and political participation on the one hand, or to experience mental strain on the other. Our findings do not suggest that psychologically demanding work is always accompanied by deleterious effects; although strain does occur when job discretion is similtaneously low. However, psychologically demanding (perhaps challenging) work is associated with more socially active leisure and political participation when job discretion is also high.

Several policy implications follow from these findings. The "generalized educational process" that presumably occurs at school, appears to occur on the job as well -at least with respect to leisure behavior. The individual does not stop learning (or unlearning) as an adult and the job may be the primary "classroom." An additional policy implication is that worker's preferences for consumption (of leisure services, for example) may depend on behavioral orientations "learned" in the workplace. This could have important implications for employment levels and economic equilibrium in advanced industrial (service intensive) societies.

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This study explores the relationship between the working individual's daily experience on the job (job content) and his leisure activity, political participation, and mental strain after the workday is done. The study is based on individual level data from a representative national survey in Sweden in 1968 (comparable U.S. data on job content and mental strain is available but is not analyzed is this report).

The primary finding is that the worker's level of leisure and political activity is significantly related to the "activity level" of his job (defined in terms of job demands and job discretion). We do not find evidence that the worker "compensates" in leisure for deficiencies at work; instead active and passive behavior patterns appear to "carry over". Symptoms of mental strain are most highly correlated to a different interaction of job characteristics: high psychological job demands in combination with low discretion over behavior on the job.

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Manpower utilization
Motivation
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Social organization
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CONTENTS

Page

I. Title page 1

II. Abstract 2

III. Acknowledgement 4

IV. Table of Contents, list of tables and diagrams 5

V. Body of text

Chapter One: INTRODUCTION: DISCUSSION OF THE WORK-LEISURE PROBLEM 9

1-1 What is the Nature of the Association Between Work and Leisure Behavior 11

1-2 Models of "How" Work Affects Leisure; Beyond Income and Class, to Job Content 19

1-3 Non-Work Factors Confounding the Work-Leisure Association 30

1-4 The Swedish Standard of Living Study 1968 (1974) 40

1-5 Plan of the Thesis 42

Chapter Two: A MODEL OF JOB CONTENT AND ITS MEASUREMENT

Section 2A -- Development of a Model of Job Content

2A-1 Theoretical Issues Bounding the Work-Leisure Relationship 45

2A-2 "How" Might Work Experience Affect Behavior in Leisure Time 50
- a) Summary: A Model of "Social-Psychological Functioning" 55
- b) The "Stress-Coping" and Problem Solving Mechanism (#1) 59
- c) Inducing Changes in "Activity Level" (#2) 67
- d) Combining the Mechanisms 73
- e) Issues of Time that Affect the Model 77

2A-3 Measuring Job Content in the Literature
- a) Job Demand Measures found in the Literature 83
- b) Job Discretion Measures found in the Literature 87

...continued

Section 2B -- The Empirically Derived Job Content Dimensions 91

2B-1 Deriving the Job Content Dimensions from the Data

2B-2 The Job Content Dimension
  a.) Psychological Job Demands 102
  b.) Physical Job Demands 107
  c.) Intellectual Job Discretion 114
  d.) Personal, Schedule Freedom 119

2B-3 Summary Statistics and Critique 123

Chapter Three: THE LEISURE ACTIVITY INDICATORS

3-1 Patterns of Leisure Behavior: A Summary 127

3-2 Literature Review: What Our Leisure Patterns Are Not 132

3-3 Data on Leisure Activity 140

3-4 Factor Analysis of Leisure Activity 147
  a.) The Unrotated Factors 149
  b.) The Factor Pattern 151
  c.) Discussion of the Leisure Patterns
  d.) Resolving the Ambiguous Correlations
  e.) Communality of the Variables 160

3-5 Summary Leisure Activity Patterns 164

Chapter Four: THE JOB CONTENT-LEISURE BEHAVIOR ASSOCIATIONS 166

4-1 The Leisure and Political Non-Participation Indicators (And Mental Strain Symptoms) 167

4-2 Univariate Associations 172

4-3 Testing the Job Content Model: Job "Activity Level" and "Unresolved Strain" 174

4-4 General Conclusions 194
  a.) Compensation vs. Carry Over
  b.) What is the Mechanism of "Social-Psychological Functioning" 199
  c.) A General Perspective Comment 203

Chapter Five: ALTERNATIVE EXPLANATIONS OF THE WORK-LEISURE LINKAGE: APPROXIMATING A CAUSAL MODEL 204

5-1 Discussion of Alternative Hypothesis Tests

...continued

5-2 The Effects of Individual Background on the Work-Leisure Associations: Testing for Environmental Components of "Personality" 211
- a.) Education 212
- b.) Childhood Life Experience (with Mental Strain Footnote) 218
- c.) Family Educational Background 225

5-3 Testing for Time-Related Effects:
- a.) "Job Socialization" 227
- b.) Other Age-Related Effects: Life Cycle 238
- c.) Personality Fulfillment (Via "Job Selection") 242

5-4 Community and Social Relationships
- a.) Relationships with Friends and Relatives 249
- b.) Urban Scale 252

5-5 Status: Class, Income, Wage, Education 258
- a.) The Work-Leisure Associations in the Low Status Populations 263
- b.) Assessing the Relative Contributions of Job Content and Status to the Work-Leisure Associations 268
- c.) Income Dynamics 275
- d.) Interpretation of the Findings for Education and Income 276
- e.) Summary of Status Variable Findings 286

5-6 Overall Summary of Finding About "Alternative Hypotheses" and "Job Socialization" Effects 289

5-7 Practical Implications of the Conclusions 294

VI. Bibliography 300

VII. Biography 312

VIII. Appendices

A-2 Job Content Distribution Tables 313

A-3 Stability of the Leisure Factors by Age and Sex 319

A-4 Technical Comments on Percentages and "Logits" 323

A-5 Supplimentary Tables - Mental Strain Factor Analysis 326

LIST OF TABLES

Page
1-1 Composite Variables 44

2-1 Job Content Variables 93
2-2 Psychological Job Demands 102
2-3 Physical Job Demands Correlation Matrix 108
2-4 Physical Job Demands 110
2-5 Intellecutal Job Discretion 114
2-6 Personal, Schedule Freedom 119
2-7 Final Indicator Correlations 124

3-1 Frequency of Leisure Activity 142
3-2 Correlation Matrix of Leisure Activities 146
3-3 Unrotated Factor Loadings 148
3-4 Varimax Rotated Factors 150
3-5 Communality of Leisure Variables 161
3-6 Final Leisure Activity Patterns 165

4-1 Leisure (Low) Participation Indicators (Mental Strain Indicators) 171
4-2 Univariate Associations -- Job Content Leisure Activity (Job Content-Mental Strain p. 175 ff.) 174
4-3 Test of Job Content Model 181
4-4 Best Predictor of Leisure (Non) Participation (of Mental Strain p. 188 ff.) 187
4-5 Scale of "Active Leisure" Behavior 192
4-6 Work-Leisure Associations "Active Job; Passive Job; Leisurely Job; Heavy Job" 196

5-1 Leisure (Non) Participation by Selected Population Characteristics 206
5-2 Job Content Selected Variable Correlations 208
5-3 Impact of Individual Background (Regressions) 214
5-4 Impact of Individual Background (9 Cell Tables) 215
5-5 Relative Leisure Participation by Job Content and Duration of Work Experience 230
5-6 Testing for "Job Socialization" 233
5-7 Job Content "Mobility" by years of Work Experience 243
5-8 Relative Impacts of Work Experience and Individual Backround on "Job Socialization" Effects 244
5-9 Work Time and Work-Leisure Association for Female Workers (see 5-5)
5-10 Impact of Social Status and Community Social Relationships (Regressions) 256
5-11 Impact of Social Status and Community Social Relationships (9 Cell Tables) 257
5-12 Multivariate Regressions Job Content, Income, Education 273
5-13 Leisure (Non) Participation for Job Content + Status "Low-Low" vs. "High-High" 288

APPENDIX TABLES

A -1 Summary of Job Content Dimensions 313
A -2 Distribution of Job Content by Industry and Social Class 314
A -3 Distribution of Job Content by Industry by Social Class 315
A -4 Distribution of Job Content by Sex (by Social Class), Age, Work Time 316
A -5 Distribution of Job Content by Job Security, Union, Contract Form 317

...continued

A -6 Job Demand Factor Analysis, Young/Experienced Workers 318
A -7 "Corrected Probability" (p') Calculated from "LOGIT" of Probability (P) 324

LIST OF DIAGRAMS

2-1 The "Unresolved Strain" or Stress-Coping Mechanism 66
2-2 The "Activity Level" or Job Socialization Mechanism 72
2-3 The Combined Model 73
2-4 The Multicell Tables 74

4-1 The 9-Cell Tables 179
4-2 The Primary Job Content Leisure Activity/Mental Strain Associations 189

5-1 Participation Rate Changes by Work Experience Cohorts 232
5-2 Test of "Job Socialization" Hypothesis 234
5-3 Leisure Participation by Income 269
5-4 Summary Model of Job Content-Leisure Participation and Alternative Hypotheses 293

CHAPTER 1

INTRODUCTION

Stated most broadly the goal of this study is to examine how the experiences of working life in advanced industrial societies affect active and creative patterns of behavior in the leisure sphere of life. The impacts of work on life outside the job merely supplement the vast differences in satisfaction experienced during the working day, and help complete the picture of the impact of work experience on the quality of modern life.

We will review data to test the proposition that some jobs entail such pressures and restrictions that life outside the job is an almost compulsive recuperation period at best and at worst a backdrop for progressive social withdrawal and chronic mental strain. At the other end of the occupational spectrum are the good jobs which leave the worker free from unnecessary strain after work, and may serve as a learning platform for creative and socially active use of free time. Thus, one of our hypotheses treats active social leisure as a stress "coping" mechanism and as one section of the continuum of mental health "outcomes" of work. The other hypothesis examines the proposition that job experiences socialize workers into particular patterns of activity that carry over to life outside the job.

The comprehensive quality of the Swedish Standard of Living Study 1968 national survey data permits a wide range of alternate theories about the linkages between work and leisure.* For this study we build upon the methodolotical guidelines developed by Melvin Kohn in research in the impact of the workplace on "psychological functioning" off the job,** and attempt to formulate a more precise test of the sociologist's classic question about work and leisure: Does leisure represent a "compensation" for work or a "carry-over" of behavior from the work day into the after-work hours? The economic and social status variables are excluded from our hypothesized mechanism, but tested as alternative theories of association between work and leisure.*** We must omit anthropological expanations that emphasize detailed, culturally reinforced relationships, but have aggregated data on the worker's relations to friends and relatives. Veblen-inspired hypotheses that leisure choices represent attempts at reference group "membership" are excluded for lack of data.

In Chapter 1 below three questions are taken up in turn which structure the research problem of the dissertation:

A. What is the relationship between work and leisure behavior?

B. How does that relationship occur?

C. What are the effects of factors counfounding the hypothesized linkage, through "social-psychological functioning"?

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*This study, now completed with a 1974 panel, is a random sample of the adult Swedish population (1:1000, n = 5,923).

**Kohn, M., & Schooler, C.,"Occupational Experience and Psychological Functioning," A.S.R., Feb. 1973. See also p. 8.

***The much discussed problem in economic literature of the trade-off between work and leisure time is less specific than our interest in "what type"(and why) a linkage occurs. See, for example, Becker, 1965; Robbins, 1930; Mabry, 1968. Linder (1970) has a more elaborated model.

1-1 What is the Nature of the Association Between Work and Leisure Behavior?

The sociologists have taken a broad descriptive perspective on the relationship between work and leisure in modern industrial societies. While much of the literature is speculative,* four recent empirical studies have proposed the same general hypothesis (Meissner, 1971; Parker, 1971; Torbert, 1973; Young and Wilmott, 1973): leisure either represents a "compensation" for deficiencies in the work environment, or leisure represents a "carry-over" of behavior patterns learned on the job. The null hypothesis in these studies is that there is no systematic relationship: one's life during the leisure hours is unaffected by experiences at work.

The small number and recent dates of the available studies attest to the fact that the general area is not thoroughly researched. Indeed the first task of the thesis is to generate more specific hypotheses to structure the analysis. However, there is one advantage to the simple stated hypothesis above: the "compensation/carry-over" perspective makes explicit the social policy implications. If work patterns "carry-over" into leisure, workers with miserable jobs might be doubly miserable when the "outcomes of work" were also considered. Compensatory leisure, by contrast, might eliminate the distributional inequalities of the economic structure. The distributional consequences of this linkage extend to the sphere of public resources as well: if there is a relationship between occupation and the consumption of publicly provided leisure services and facilities, who benefits from these expenditures and to what extent?

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*For example, De Grazia, Sebastian, Of Time, Work, and Leisure, 1962; Huizinga, J., Homo Ludens, 1950.

The simple compensation/carry-over hypothesis carries another important economic implication. If the worker's demand for "leisure consumption" (services and some goods) is affected by his daily experiences on the job, then an important postulate of contemporary economics must be reconsidered. "Individual preferences are not exogenous" (at least for leisure services). They may be determined by the neglected social and psychological implications of work. The economic equilibrium of advanced "service oriented" societies might be subject to unexplored social policy mechanisms that would affect the content of work experience.

Such lofty aims are far beyond the predictive capacity of the present work and leisure research. The first shortcoming of the existing studies is that no comprehensive model of "how" work affects leisure. The second is that the findings are based on limited one-site case studies, where the parameters of the sampled population do not easily suggest broad generalization of the findings.*

Stanley Parker's recent book, The Future of Work and Leisure, utilizing 200 interviews, contrasts the leisure activity of "bank employees" and "social workers." Bank employees stated a preference for leisure that was "satisfying in a different way than work." A review of the abilities used by these two groups of workers during work and leisure, however, indicates that individuals using more of their abilities on the job were also both more likely to attend organizations in their spare time, or to read a book. "The present evidence is that those who find work more demanding of their abilities are more likely to be socially or intellectually active in their leisure than are those who find work less demanding.... (This) casts doubt on the theory that people can make up in leisure what they lack in work." These results indicate two broad patterns: bank and unskilled workers were uninvolved in their work, and maintained a strong distinction between the work and leisure worlds; the social workers were more involved in their work, more socially and intellectually active in their leisure, and had a more integrated conception of work and leisure (pp. 84, 85).

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*William Torbert's Being for the Most Part Puppets (Schenkman, 1973) provides an innovative synthesis on the "existential growth" perspective on meaningful work and leisure. Unfortunately the empirical analysis does not appear to provide precise indications of job content (very low variance between substantially different jobs).

Parker's research concentrates primarily on occupations. Occupational differences in leisure are easy to spot, but they are difficult to attribute to specific characteristics of a job. Without an explicit set of dimensions upon which to measure compensation or carry-over immediate problems arise: Can any work-leisure difference mean compensation? Can compensation for a job at the steel foundry be anything from camping to bar hopping to stamp collecting? (Only metal casting hobbies, presumably, are excluded.) On the other hand is "carry-over" only clearly identifiable when a school teacher in her leisure pursues reading novels or voluntary library work, or may it as well be camp counseling or antique auctioning? All of the significant dimensions of work must be identified before we can reject the hypothesis that "carry-over" or compensation does not occur on at least one of them. Parker does begin to parametrize these differences in occupations: he distinguishes the "usage of abilities" by bank tellers and social workers, but the dimensions are neither precise, nor conceptually distinct. It is not clear, for example, that "use of abilities" "demanding work" and "being involved" are conceptually equivalent (in our model they are not: Chapter 2).

Meissner's study, "The Long Arm of the Job," represents a substantial methodological advance. He selects one occupational group (206 lumbermill workers in Canada, all male, unionized, and below foreman level) as a setting for his questionnaire study of work and leisure. Meissner proposes several dimensions of work (machine pacing; spatial confinement; task dependence; central production vs. ancillary; and social interactions at the factory), and then tests the hypothesis that leisure represents a carry-over or a compensation for work behavior with respect to social interaction*during the job and after hours. The study concludes that workers who are allowed little discretion in their jobs demonstrate little decision making activity in leisure activities, and that individuals whose work environment allows little opportunity to talk to new comrades have "dramatically reduced rates of participation in associations." He found also that low job discretion "is balanced by greater amounts of activity in which informal relations predominate."

Meissner's methodology involves testing for any significant correlations. He does not propose a comprehensive model of "work" which could select beforehand critical carry-over/compensation tests. The lack of a broad frame of reference makes it hard to judge whether a full range of job characteristics has been "covered." The flaw of Meissner's work is that without a model of why work and leisure patterns are correlated

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*see footnote next page: Wilensky's "privatized" leisure.

it is hard to be convinced that other factors do not account for the associations. Perhaps the true "cause" is neighborhood- or family-specific characteristics of the small sample, or unmeasured aspects of the job.* The majority of Meissner's relationships (15 of 16) indicate a carry-over instead of a compensation relationship, but the difference in both the dependent and independent variables is quite small. This lack of variance causes more than methodological difficulties: we do not have any indication of how important the effects are for the population as a whole considering its full range of income, status, and demographic differences.

The difficulty in testing the compensation/carry-over hypothesis lies in part in the imprecision of its questions (except "privatized" leisure**). It is not even clear that carry-over and compensation need be nutually exclusive.*** For example, a homeostatic process of daily job stress "compensation" through relaxation or sleep is not inconsistent with the adaptive "carry-over" of long term work-induced behavioral changes. The broad descriptive compensation/carry-over hypothesis cannot be translated to a "middle-range" theory (Merton 1968) unless the mechanisms by which behavior patterns are transferred from the sphere of work to another sphere are specified.* These mechanisms must be explicit if we are to contrast the importance of the "intrinsic" aspects of work with other aspects of the job such as economic resources. No similar imprecision plagues the use of economic mechanisms, where there are immediately available clear measurements (wages, hours, output, "training level," etc.) to test the theory.

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*The choice of inter-occupational focus does allow status and income effects to be discovered, however: see p. 19.

**There is one more specific variant of the compensation/carry-over hypotheses which specifically postulates the scale of social integration at which leisure activity is chosen to take place. Wilensky advanced the hypothesis that workers with "underdog" positions in the occupational structure would develop "privatized" leisure—activities performed in isolation or within the nuclear family—without strong linkages to the large community. Wilensky does not really specify the dimension of work that is relevant or the mechanism through which social withdrawal is to take place. He rejects the utility of social economic status alone, as a weak predictor of behavior in the middle class. Willmott and Young, Family and Kinship in East London (1957), for example, find a pattern of "privatized" leisure in the working class suburbs outside of London. They attribute the effect to severance of the old urban neighborhood kinship structures, not to the impact of job characteristics.

***Faunce, W. Dubin, R., "Individual Investment in Working and Living," in Quality of Working Life 1975, Davis, L., Charns, A., eds., Free Press.

Thus, the first task of this thesis is to develop a model as to "how" the relevant range of job characteristics might affect patterns of behavior outside. It will be a model of "job socialization", and will be based both on characteristics of the individual and of his environment. (see Chapter 2 and the following section).

Another goal which has motivated this study is the choice of data sample. Meissner's lumberman findings, for example, do not allow immediate generalization to a national population. We do not know how "serious" an issue "the long arm of the job" is until a representative range of social strata are contrasted. For our analysis we choose data at the broad national scale because of its potentially greater validity in public policy analyses. Another advantage of a national survey is its ability to serve as a background matrix against which to assess the implications of smaller case studies. Much work environment research consists of small one-plant (or several plant) studies.** The lack of an empirically validated framework for the comparative analysis makes assimilation of the "big picture" quite difficult. In order to fulfill this purpose a broadly conceptualized study must be able to parametrize all the relevant background variables that would differentiate case studies: urban scale, industry type, community type, income level, age or sex of the working population, etc. Another advantage of a broad representative survey is that suitable variance is assured on all the relevant dimensions so that correlated, but conceptually distinct mechanisms may be distinguished. These great strengths of a national representative sample (as we will see) must often be balanced against lack of precision in measurement of each of the variables.

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*The literature on adult socialization (see Chapter 2) is hardly more precise.

**For a display of some 1500 job conditions studies see James Taylor, 1975

The choice of data sample was the Sweden Level of Living Study 1968 (1974 also). Its relevance for a discussion of the work environment in the United States is, of course, debatable, but two factors enhance comparability: The individual level focus of the Swedish data means that it is our unexplained variance which comprises the most questionable segment of an analysis for comparison to the U.S.*: local cultural traditions. Our study of course is not a comparative analysis; community traditions are not really a part of our analysis.** A second advantage is that recent re-

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*That is, the cultural level determinants of the work-leisure linkage are more likely to be cross-culturally different than the individual level determinants. The lack of cultural factor data is a shortcoming and a lot of unexplained variance is to be expected. Hopefully, it is that "unexplained variance" which has different sources in each country.
**There is no comparable U.S. data on leisure, work and backround. We have covered Mental Strain Symptoms in the Swedish analysis, however, for the explicit purpose on comparison to the U.S. data which does exist for working conditions and mental health.

search by the U.S. Social Security Administration has shown the evolving patterns of lifetime work and leisure allocation since 1950 in Sweden have been most analogous to those in the United States.*

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*"Lifetime allocations of work and leisure," Juanite Kreps, H.E.W., p. 24. Sweden, like the United States, is a "post industrial" economy with a substantial portion of its imployment located in the service producing sector (58% U.S. 1974, 54% Sweden 1968), although, the agricultural sector in Sweden is larger (11.4%) than that of the United States (I.L.O. Yearbook, Geneva 1969). Employment, work environment and stadard of living data are at least as comprehensive in Sweden as in the United States. In addition, Sweden is a notable source of Job Enrichment Activity (over a hundred experiments were in progress (1972)—ten of these carefully controlled) and a leading country in leisure "usage" (66% of the adult population had taken a holiday of more than 6 days in 1967—the highest figure in the world). There are several significant differences between the work environment in Sweden and that of the United States which have some relevance to our analysis. Sweden in 1968 had a full employment economy (unemployment 1.5%). This is a substantially different situation than the current one of the United States, but the U.S. Survey of Working Conditions data sampled in 1969 and 1972 avoids the current high unemployment peaks. This Swedish data may well help us from one analytic standpoint: the linkage between work and leisure does not depend on the contaminating effects of unemployment; patterns of leisure time usage should reflect real leisure "preferences" and not job insecurity or job search patterns. Another major difference is that over 80% of the full time Swedish workers are affiliated with a trade union. In the U.S. the figure for the private sector labor is about 24%. This substantially greater degree of labor organization has some effect on leisure behavior: a "labor movement" category of political activity is more significant than in the United States.

1-2. A Model of "How" Work Affects Leisure: Beyond Income and Class to Job Content

An important element of this study is thus to develop a coherent theoretical model of "how" work behavior should affect leisure time (Chapter 2). The theoretical and methodological shortcomings of the existing "work-leisure" research force us to search beyond the existing literature into a broad range of studies that investigate the implications of work activity on social behavior. Once such a Pandora's box has been opened, one is tempted to shut it again by rigidly structuring the review.

We begin with the most obvious aspects of occupation: the economic resources it provides and the social status it confers. These ubiquitous dimensions of daily experience undeniably affect leisure, but there is a strong suggestion in the literature that leisure time activity (including political activity) is not solely determined by them.* Goldthorpe et al. (1969, p. 98) find that increases in the income level of industrial workers do not change life styles outside of work. They speculate that other, unfortunately unspecified, "objectives...and conditions" of work may be controlling. Meissner's study shows significant work-related leisure differences for workers of exactly the same status and income level. The differences in leisure for Parker's bank tellers and social workers can also not be accounted for by their almost equal status.** Young and Willmott find uneven status effects.***

Wi lensky provides a convincing informal argument with two images of working class leisure ("carry-over" and compensation portraits).

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*One group of studies focuses on specific occupations and distinguishes the difference between economic (or context: Herzberg, 1959; Zdravymyslov, 1969) factors in the workplace and the "job itself."

**NORC prestige scores 1963-1965: social worker = 50, bank teller = 46-50. However, Goldthorpe (1974): bank teller = 40, social worker = 61.

*** Young and Wilmott, Symmetrical Family, 1973, find that active sport is highly class related, but other generalizations are hard to draw (organization attendance is more common also).

> In an up-to-date version the Detroit auto worker, for eight hours gripped bodily to the main line, doing repetitive, low-skilled, machine-paced work which is wholly ungratifying, comes rushing out of the plant gate, helling down the super-highway at eighty miles an hour in a second-hand Cadillac Eldorado, stops off for a beer and starts a bar-room brawl, goes home and beats his wife, and in his spare time throws a rock at a Negro moving into the neighborhood.
>
> Another auto-worker goes quietly home, collapses on the couch, eats and drinks alone, belongs to nothing, reads nothing, knows nothing, votes for no one, hangs around the home and the street, watches the "late-late" show, lets the TV programs shade into one another, too tired to lift himself off the couch for the act of selection, too bored to switch the dials.

It is clear that both passages describe a dismal leisure that represents no compensation in terms of quality of life. What these two passages do suggest, then, is that there may be multiple and distinct disadvantaged populations within the work environment. While these disadvantages may be localized at the bottom of the occupational hierarchy, a more detailed analysis is necessary. All jobs of high income or high status rewards are not equally desirable in terms of their non-economic impacts, nor are all low paying or low status jobs miserable in the same way. A description of the worker's status in the occupational system for the purpose of predicting life styles or community participation* may require additional, non-colinear information about the content of his work.**

The impact of income and S.E.S. is not easily dismissed, however. National population studies analyzing a range of independent variables conclude that socio-economic status has a major impact. A national recreation study in Britain (Parker, p. 60) finds that high income level, occupational status and educational status of contacts affect not only the number of leisure activities but their type as well (Clarke, 1956).

Another "leisure time pursuit" is organizational and political activity. National studies of the political participation (Verba and Nie, 1972; Milbrath, 1965) find that income or social status are by far the best occupationally related predictors commonly utilized. The problem, however, noted by Milbrath, is that "The importance of other occupational characteristics is often raised in discussion, but not pursued because of methodological problems defining the relevant dimensions of work (except status which is already covered)" (Lipset, 1960; Lane, 1959).

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*Goldthorpe and Hope, The Social Grading of Occupations, p. 4.

**Blau and Duncan allude to an additional independent dimension of occupation, but do not pursue it. The American Occupational Structure, p. 71.

If these non-S.E.S. aspects of occupation affect "attitudes" or other psychological processes* their importance for "leisure time behavior" is confirmed by Verba and Nie: the original relationship between S.E.S. and political participation drops from .37 to .16 when attitudes (civic orientations, p. 134) are partialed out.** The overall implication of these findings is that while income and status do have a major impact on leisure activity patterns, characteristics of job content or job-induced psychological processes, not summarized by status, have an independent effect. Indeed, one might ask (as we do in Chapter 5) whether occupational status merely reflects underlying and more specific aspects of the workers relationship to the means of production.

On to Job Content - A Coping Model of Job Socialization

Our first strategy to determine these relevant non-status characteristics of a job is to examine the very extensive literature on job satisfaction, organizational behavior, and occupational health. Of the many themes that might be extracted we somewhat arbitrarily identify three traditions, which we hope still provide a coverage of the literature:

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*Verba and Nie also discuss another non-instrumental correlate of political participation, "psychological proclivity to participate," but do not relate it to occupation.

**See discussion, p. 28.

a. The Job Satisfaction and Worker Motivation Literature

From this research tradition we extract one broad dimension of job content: job discretion -- the range of an individual's decision making at the work place.* Usually the researcher measures: task variety, use of intellectual skills, schedule freedom, responsibility over the work process. The finding is that employees generally (but not always)** report higher job satisfaction in jobs with greater decision making freedom (Gardell, 1971), while the inclusion of workers' aspiration levels sharpens and focuses this finding (Westlander, 1975; Hackman and Lawler, 1975). A subsidiary finding*** is that these aspects of work are often highly correlated (job breadth and skill level, Gardell, 1971; skill, autonomy and variety, responsibility, Turner and Lawrence, 1965). Thus we give a name to this broad area of job content -- job discretion: the job-prescribed freedom in decision making about job-related action, formal and informal.

b. The Job Stress and Mental Health Literature

From this more recent research tradition we can extract another broad dimension of work: job demands. Most studies in this tradition relate the individual "stress" induced by the requirements of work to the mental strain symptoms or to behavioral differences on the job. Job demands typically cover not only the level and type of "output" required (Caplan, 1975; Quinn, 1971), but sources of insecurity (Kohn and Schooler, 1973) and social dissension or role ambiguity (Katz and Kahn, 1964) at the work place. Crucial to our model is a very recent body of findings suggesting that it is the interaction of job demand and job discretion that determines mental strain on the job (Caplan, French et al., telephoned communication, 1975; Frankenhaeser and Rissler, 1970). These findings are the empirical cornerstone of our coping model where worker freedom of action modulates the strain induced from individual job demands. There are further hints (N.I.O.S.H., 1974) that the style of coping with stress (Kohn, 1972) is associated with the development of basic behavioral styles.

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* Walker and Guest, 1952; Turner and Lawrence, 1965; Hackman and Lawler, 1971; Gardell, 1971.

**Turner and Lawrence, 1965, do not find this in general.

***A third finding is that worker self-reports in this area are generally highly correlated to expert evaluations (Turner and Lawrence, 1965; Hackman and Lawler, 1971; Gardell, 1971).

c. The Group Dynamic and Autonomous Work Group Literature

From this research tradition we extract several measures on individual-group integration: job social relationships. One set of findings emphasizes the importance of work group norms in setting level of output (Roethlisberger and Dickson, 1939) or in job training and recruitment policy (Doeringer & Piore, 1971). A second tradition is relevant to our model of job content (but not testable). It is that the effects of job demands and job induced stress are buffered (or "coped with") in a socially integrated work group (Seashore, 1954; Klein, 1971 ; Pinneau, 1975). This type of finding is important, for it confirms the importance of the interaction (Seashore, 1954) of several conceptually independent elements of job content: job social relations and job demands, to predict behavior and mental state.

(Unfortunately, the Swedish data contains few measures in this area.)

A Coping Model

The model these findings bolster is a "stress-coping model " whose theoretical origins will be further discussed in Chapter 2A. These research traditions highlight the independence of, and yet, the interacting importance of three elements* of our job content model: job demands, job discretion, and job social relationships - with the further suggestion that both characteristics of the work environment and of the individual must be included.** The implications of the interactions are summarized (see p. 55) in the definition of four job types: Active, Passive, Heavy, and Leisurely.*** It is this model which we test for work carry-over into leisure, along with alternative hypotheses measured by income, wage, class, education.

Although the process of hypothesis formulation is not complete, we can state the first hypotheses. Both are complementary processes of the "stress coping" model:

1. Symptoms of mental strain are associated with high "residual strain" from the job. High "residual strain" occurs when high job demands are not accompanied by freedom of action in decision-making at the job (a "heavy" job, the opposite is true for a "leisurely" job).

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* Our justification for isolation of the three blocks is not only their conceptual distinctness, but also the fact that important interactive effects occur between the dimensional blocks.

**Hackman and Lawler, 1971; Argyris, 1972.

2. The second hypothesis is that "active" jobs socialize workers into active leisure time pursuits, and that "passive" jobs socialize workers into passive leisure pursuits. An active job is one with high job demands, which similtaneously allows the job holder much discretion in either the formal or informal work processes. Passive jobs are at the low end of the "coping intensity" scale, and occur when when both the demands of the job and freedom of action are low. We also hypothesize that mental strain will be lower in active (than 'heavy') jobs, given the same level of job demands.

	Job Demands	
Job Discretion	low	high
low	Passive Job	Heavy Job
high	Leisurely Job	Active Job

Whatever occupational characteristics are relevant, there is an additional implication of the process of behavioral carry-over (but possibly not of compensation). It implies "occupational socialization." The behavior patterns on the job are "learned at work" and supplement whatever other orientations the individual retains from childhood. (see p.30) Thus, there should be incremental changes in behavior with additional exposure to working experience.

3. The work-leisure association should strengthen with increasing work experience (assuming the job does not change). This effect of increasing work experience might be measured by more hours worked per week, as well as more years of working experience.

The earlier discussion of the income and status aspects of work suggests two subsidiary hypotheses:

4. The frequency and type of participation in leisure activity cannot be primarily explained by the economic rewards of work or by the impact of other scarce resources such as the daily time budgets.

   The frequency and types of participation in leisure activity cannot be explained primarily by social class(as it is measured in the Swedish data) , apart from its occupational implications.

5. We suggest that class, income, and job content are highly colinear only at the top of the occupational hierarchy. This suggests that the most successful overall measurement of the work environment (at least with respect to leisure behavior) is one that combines job content and the status variables. This hybred model of "role-performance" may no longer be unidimensional.

Dimensions of Leisure Time Acitvity

The structure of leisure time activity must also be rigorously conceptualized. The same criticism made of occupational analyses earlier (that their important attributes were not identified) can be leveled against a study of leisure behavior that merely tabulates leisure occupations: fishing, card playing, reading, attending meetings (Havinghurst, cited in Parker, p. 61). Unfortunately the leisure literature does not provide a clear conceptual structure*(see Chapter 3) and we must turn to the political participation literature.

We include measures of organizational and political participation to the extent it represents further data on socially relevant behavior patterns pursued in leisure time. We attempt to exclude from the empirical analysis, however, that major element of political engagement which represents purely instrumental behavior**(i.e. voting behavior). Young and Willmot (197) found in a survey that political activities of the sort we measure (participation in organizations, speaking at meetings, etc.) are rated most "work-like" of leisure time activities. Most of our leisure questions measure goal-oriented activities only moderately less "work-like" than political participation, so the same dimensional structure may well apply. Least "work-like" of all are pas times such as loafing, watching T.V., which our data does not cover.

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*Our basic strategy to develop leisure dimensions is actually an empirical one(see Chapter 3): a two stage reduction of a list of 29 leisure activities. A common factor analysis is first applied to define a smaller number(8) of "latent" dimensions which summarize the internal structure, In the second step these are aggregated on the basis of association with the "exogenous" work vbls.

**Our separation of the instrumental functions of political participation from the "psychological participation proneness" (Verba and Nie, 1972, p. 195) is not unique (although the concentration on the "purely behavioral" functions may be) (Lipset, 1960 p.193-5; Lynd, 1929). The most typical "instrumental" causal path for political participation is traced through social status, including not only income but other less economic prestige benefits. Individuals of high status in the social system are more likely to gain or lose the benefits they enjoy on the basis of political decisions (Milbrath, 1965, p. 18).

A Possible Dimensional Framework (from Political Activity)

One common theme of political participation research is that a set of "attitude"* dimensions are postulated (Milbrath) to link increasing social status to increasing participation. These "attitudes" often include a dimension of psychological involvement, a dimension of skill, and several complex measures of individual-societal relationship. These measures are almost identical to those we developed above to describe processes of social-psychological functioning on the job.

> According to this model the social status of an individual—his job, education and income—determines to a large extent how much he participates. It does this through the intervening variables of a variety of civic attitudes conducive to participation: sense of efficacy, of psychological involvement in politics, and a feeling of obligation to participate (Verba and Nie, p. 13).

Verba and Nie's second dimension, psychological involvement, is very similar to our "psychological job demands" (or stress inducers), and their first dimension, "skill and competence," to our category of job-prescribed discretion (measured by intellectual complexity and personal freedom, the potential for mastery over the work situation). There is a similarity also with the dimensional framework for political participation developed by Leif Lewin* to our job demand, job discretion, and job social relationships:

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* This thesis deals with the same void—but postulates a set of mechanisms—called socio-psychological functioning—to avoid the theoretical vacuous area of attitude research.

**Lewin, Leif, Folket och Eliterna, en Studie i Modern Demokratsk Theori, Statsvetenskap Föreningen, Uppsala University, Sweden, Almqvist and Wiksell, 1970. Cited in Johanssons, Politska Resurser, LIU, Almänna Förlaget, 1971.

I. Activity Level, which includes interest engagement, discussion proclivity, media involvement (as well as voting which we exclude).

II. Competence, which included factual knowledge and intellectual agility on relevant issues.

III. Social System Relationship. (This, however, is never the same for the citizen's instrumental "role" in politics as for the pure activity component of his behavior.)**

Milbrath's study of participation does not include a detailed attitude theory, but nevertheless measures the significance of similar dimensions of political orientation: psychological involvement is especially correlated ($r = .29$), as are high education, and membership in a variety of voluntary organizations. Although these findings do not confirm a linkage between job content and political activity, it is remarkable that three different sets of dimensions of participation are quite similar to the job content dimensions, an indication that the carry-over hypothesis could be well tested for work and political activity.

**There is a sharp difference between leisure and political activity in its social integration dimensions. Our model does not systematically differentiate the effectiveness of participation for providing an outlet at the individual level ("propensity" for activity, coping) from participation in macro-social process to help alleviate the strains (societal coping) in the social system. A double model with both individual and social levels of strain, and rates of coping intensity for the individual and for the society, could be constructed. In that case, when the "external demands and constraints" on the society were such that "strains" resulted, we could postulate analogous effects to those we propose for the individual: an active society (one with effective political coping strategies, processes and institutions) will be able to cope with societal stress, indeed may become more politically "effective" in doing so. However, without such mechanisms, a society under stress will experience only high levels of unresolved strain leading to social pathology (alienation, anxiety and aggressive reaction), as they lead to mental problems for the individual.

1-3. Non-Work Factors Confounding the Work-Leisure Association

One major methodological problem to be solved is the possibility of "confounding factors" dependent on the individual's background or personality that determine both work and leisure behavior. At least four types of potentially relevant "enduring characteristics of the individual" may be distinguished. The first we omit in our analysis: genetically "fixed" physical or biological characteristics.*

1. Present Personality Profile (no such data in the Swedish survey). The major problem with such a measure is that it could be another "result" of job experience, just like leisure (Kohn, 1973). A more consistent problem with "personality measurements" included in work environment research is that it has been impossible after 30 years of investigation to consistently identify the relevant personality characteristics that mediate the impact of the environment on the individual (for a discouraging summary see N.I.O.S.H., 1974; McClean, 1970; Caplan, 1975). Obviously, the existing research instruments do not capture the undeniably important dimensions of personality.

2. **The Effects of Childhood Experience** Important aspects of an individual personality are no doubt formed out of the experiences of his early family and social environment. These orientations should be measurable either as present impacts on personality, or by reviewing the past environmental circumstances. Their "prior" occurrence makes them exogenous** variables for our work-leisure analysis.

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*1. Kohn, M., "Class, Family, and Schizophrenia, A Reformulation," Social Forces, 1972 , p. 5. "It seems improbable that class differences in the incidence of schizophrenia result entirely, or even largely, from genetically induced, intergenerational social mobility."
2. Jencks, C., Inequality, Harper and Row, 1973. "The most genetically advantaged fifth of all men earned only 35-40% more than the most genetically disadvantaged fifth.... If all non-genetic causes of inequality were eliminated...[income gap top 1/5 - bottom 1/5] would fall from around 7 to 1 to 1.4 to 1" (p. 262).
3. Ashord, Nick, Crisis in the Workplace, M.I.T., 1975.
"It may be recalled that genetic factors do not explain the bulk of heart dixease"

**Some "background" variables such as education may not be completely exogenous. Since an education may be chosen as a step toward a particular future job, it could also be included as part of work's "causal" impact, broadly defined.

3. Latent Personality Orientations (the cause of job selection or mobility)
   This effect is hardest to measure in research. In this case personality orientations at any given time cannot be simply measured to ascertain the impact of personality on behavior. There may be a "latent seed" of personality, implanted in early childhood, which does not manifest impact on behavior until adulthood. One form of this argument is "job selection" theory (Blau et al, 1956). The individual gradually fulfills the latent "templates" of his personality as he matures, and this is expressed as ever more congruent choices for work and leisure.

To conclusively reject the third type of personality impact is extremely difficult: longitudinal data on work, leisure and personality is required.* Since such data is rare (Elder, 1974; Stone & Onque, 1959) researchers must make do with sketchy background data to satisfy the critics (Zalesnick, et al 1970**) of environmental socialization. Perhaps the best such study, by Kohn and Schooler (1973), tests for the reciprocal effects of occupational experience on psychological functioning. They present a convincing case that the effect of job experience on individual personality is about double the effect of personality on job experience***(for "substantive job complexity"). If Kohn is correct, then

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** Zaleznik, Ondrack, and Silver " Social Class, Occupation, and Mental Health, in McLean, A. Mental Health and Work Organization, 1970

*a) If one has longitudinal data, one strategy is to check the relative stability of the three parameters over time. b) Another strategy is to select a group with constant job experience, or personality, and examine leisure changes (leisure might also be treated as the exogenous variable).

***Kohn and Schooler's strategy to estimate the contrasting magnitudes of the job's effect on the man and the man's effect on the job utilizes two-stage regression analysis. To extimate the "pure" effect of occupational experience he uses a rough measure of past job complexity as an exogenous estimate of present job complexity; which is thus purged of the effects of present personality. While this is an ingenious technique it has one flaw. The test is not symmetrical because there are no estimates available of the worker's past processes of psychological functioning. These processes could have affected the choice of past jobs. Thus the findings still cannot reject the hypothesis that job mobility, determined by the evolving personality of the worker, accounts for the observed correlations. The rough measure of past job complexity is based on a regression composite from the Dictionary of Occupational Titles of job complexity scores for dealing with things, data and people, rated for 143 "job types" in the economy.

two deductions from his findings suggest that the most significant personality measure should be past social-environmental experience.* That is the measure we use below to test for the impact of personality and background.

a. Since the present environmental experience (the job) has a bigger impact than present personality, the most relevant "pure" personality measure would be that from the time just preceding the first job. (Unfortunately such data is rarely available.)

b. We can extrapolate environmental effects backward in time and conclude that the most crucial determinant of past personality was childhood environmental experience.

Kohn and Schooler's Article

The article by Kohn and Schooler represents more than just a helpful "footnote" in our discussion. In a sense it is the intellectual foundation of this thesis. It studies the same broad topic: relationship between job experience and behavior in other spheres of life. Kohn's research investigates the reciprocal relationship between measures of working conditions and enduring attitudes toward behavior which he calls "processes of psychological functioning." We attempt to go one step further and link the effects of psychological functioning to another sphere of behavior—leisure activity. We do not have empirical measures of "psychological functioning," so in a sense the processes of psychological functioning are unmeasured* intermediate variables in our test.

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*See Holmes and Rahe, 1967; Miller and Swanson, 1960; Langner and Michaels 1963. The linkage to the occupational system as a whole is provided by Kohn, 1969. Our conclusion is equivalent to the statement that the evolving pattern of "fulfillment" represented in successive job selections must have had its roots in (measurable) childhood incidents. This perspective sounds overly "behavioral or Skinnerian" perhaps. This view can be distinguished from psychological instinct theories(W. James 1890), but not necessarily from "competence motivation" theory(White,1959 Deci, 1975). For a discussion of their relation see Atkinson 1964 or a more recent view Seligman (1975).. For a discussion of motivation and job selection see Raynor, J.,"Motivation and Career Striving" in Atkinson and Raynor, Motivation and Achievement, 1974

In several respects the empirical measurements are similar: Kohn's dimensions of occupational experience are roughly comparable to our dimensions of job content. A few measures of "psychological functioning" are similar in some respects to our leisure activity and mental strain dimensions, in spite of the fact that they are treated in a theoretically different manner:**

Kohn and Schooler	Our Job Content Dimensions
1. Job pressures	1. Psychological job demands
2. Job uncertainties	2. Physical job exertions and discomforts
3. Occupational self-direction	(3. Physical job hazards)
4. Organizational locus	4. Intellectual job complexity
	5. Personal freedom at the workplace
	(6. Institutionalized job authority and security)

The two studies have different background data, however, and thus adopt different, both imperfect,. strategies to strengthen their arguments for causality in the face of missing longitudinal data. Kohn uses some past job data to obtain an estimate of present job complexity that is "purged" of the effects of present personality.

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*These processes are approximated by the manner in which the job content dimensions are organized to predict mental strain and leisure activity.

**For example, Kohn's measure of "intellectual demandingness of leisure time usage" includes participation in several leisure activities. We make a distinction in our model between variables measuring specific behavior or environmental situation, and measures of attitude or "processes of psychological functioning" which are on (in our opinion) a theoretically different level and represent only approximately measurable, inferred concepts.

We have no past job data. (The 1974 panel of the Swedish data is now complete, however.) We do have quite complete data on childhood experiences, however, and if Kohn's finding is correct, these should be one of the most important (non-job) determinants of both present personality and "latent" job selection tendencies. We have no way to exclude "job selection" effects which might have been conditioned by childhood experience which we do not measure (as with intrinsic motivation).

Thus, we can state a further hypothesis at this point:

6) Neither the association between work and leisure behavior, nor the increasing strength of this correlation, disappear when it is controlled for childhood experience (family member education; residence location; family member social status; family economic and emotional difficulties; personal or family illness; family residence changes; death in family; divorce; separations; foreign citizenship).

Whatever the cause of the "latent personality" mechanisms discussed above, it is plausible to presume that they strengthen with some measure of maturation, such as age, life cycle position, or duration of work experience. Thus to rigorously test our job socialization hypotheses, we must find a large group of workers in which the cumulative effects of job exposure (= f(work hours)), can be separated from maturation (= f(age, work experience)). Women workers (heretofore excluded in our analysis) provide such a group. They are enough part time and full time workers (which gives variance on the hours worked indicator) to allow a simultaneous control for exposure to the work environment and "maturation" in terms of years of work experience.

7) We hypothesize that the association between work and leisure is stronger for full time than for part time workers, even when years work experience or age (which affect the job selection process) is controlled.

Even these tests do not exclude a range of other historical, environmental, and non-hypothesized occupational factors that could affect both work and leisure (see Chapter 5: the history of family income changes is available). We cannot separate effects of generational change,* or of systematic shifts in the occupational structure also linked to migration patterns; we can also not exclude the effects of local cultural patterns which might affect both the choice of job and leisure activity.

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*One might still reach a conclusion consistent with our findings that young workers today are completely free in their leisure choices, and older workers were and are part of a less mobile culture where "class and community" tradition affected both work and leisure in Sweden.

Exogenous Determinants of Leisure Activity

In the previous section we discussed confounding factors that affect both work and leisure. In this section we treat "exogenous" variables that may affect leisure time but which are not related to work. Although there is less danger in this case that omission will lead to spurious findings, in order to develop precise estimates of the work-leisure association, we must separate out the impact of these other factors: impact of community and social network, life cycle and demographic categories.

A) Non-Work Social Roles and the Life Cycle

Other "work-like" activities such as housekeeping, child-rearing, and some community obligations may affect life outside the job according to the same process of "psychological functioning" that we investigate for employed work (Kerckhoff & Bac, 1968). Another problem is that certain life cycle groups face substantial burdens of both family and employed work. For women with families, working part time in particular, it becomes difficult to separate "causal" factors at the workplace from demands and constraints at home of raising a family. Thus we must divide the population into life-cycle categories by age, marital status, and sex. Within these categories the nature of the individual's primary socially obligated activity should be roughly constant, and we can test for the effect of employed work on leisure time activity and health.

We do not test the work-leisure association for all life cycle categories. We select a population group: employed males age 18-66 (approximately, from first job to mandatory retirement), and control for life cycle differences within this group. Our analysis is not detailed for age differences (we emphasize instead a detailed analysis of work experience duration which is rather colinear with age). The male working population is studied through all phases of the model; the female working population is used in one job socialization analysis, discussed above.*

B) Community and Social Network

The lack of community-specific information on local leisure customs or recreational resources** severely limits our precision in accounting for the well-documented (Bott 1956, Ginzberg 1968, Young and Willmott 1957) implications of the local social environment on leisure time usage. To control for the broad influence of community structure on work and leisure, we exclude the rural population from the study(35% of the population living in towns smaller than 100). There is substantial evidence for the impact of urban rural differences on leisure patterns***. Indeed, the very definition of the work-leisure dichotomy depends on the differentiation of life into distinct spheres of work and leisure. In rural society the boundary line is difficult to draw(Berger, 1972). Further control for urban scale must still be included,** however.

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*The comparison of men and women's leisure, and the relationship of job experience to leisure activity difference for men and women, while of great interest, is beyond this thesis. For some suggestive findings, however, see Chapter 5, Table 5-1.

**Urban scale in Sweden is linearly related to per capita community recreation facility expenditures.

***Examination of historical literature reveals a major transition in leisure life style with the rural population become urban-industrial (Thompson, 1963). This difference persists in contemporary France (Berger, 1972). Examination of individual leisure activity frequency distributions (especially for political activity) suggests non-linear changes with urban scale that would undermine our factor analysis (Lundahl, 1971).

By excluding the rural population we may also eliminate many traditional extended families, but the remaining population is far from homogeneous. The importance of the kinship structure on the nature of leisure time usage is well documented (Young and Wilmott, 1957; Bott, 1956; see Chapter 3). Community of strong traditions and family ties may affect both choice of job and leisure. The presence of a strong, extended family network implies, almost by definition, an increase in family-oriented leisure, and consequently a decrease in the external goal-oriented macro-social leisure activities we focus on.* (Sweden is ethnically very homogeneous, and thus no adjustment of the full population findings need be made because of minority groups.**)

8. We advance the hypothesis that leisure is affected by extended family but, we must rely upon a very aggregated measure: the respondent's frequency of visits to and from relatives. This inexact data prevents us from measuring such important questions as whether it is "unrewarding" work or the nature of the family structure (Young and Wilmott, 1973, p. 271) that leads to home-centeredness (Wilensky's 'privatized' leisure, 1960) We can also not determine with a socially homogeneous community (Lipset, 1960) sustains a higher level or a different kind of leisure.

9. We can test a further hypothesis that social relationships with friends are associated with a different kind of leisure behavior

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* The extended family may also serve as a "coping" reservoir, the way work groups apparently do (see p. 23), or a source of additional problems (Litwak and Selenyi, 1969).

** Within these minorities work and leisure behavior may be quite different (another research project). The most significant Swedish minorities (over 1%) are other Scandinavians: Finns (2%), Danes and Norwegians (1.2%).

than relationships with relatives. We do not expect that visits with friends will represent the same complex relationships to the kinship network that relative relations do. The literature suggests that the frequency of leisure activity may be highly correlated to friendships (Parker, 1971, Lundahl 1971). A two-stage regression analysis would be needed to determine whether friends "caused" leisure activity or leisure activity "caused" visits with friends to increase. The effect of the job as a source of friends must also remain uninvestigated. We have only an indicator of total frequency of friendship visits.

1-4 The Swedish Level of Living Study 1968

The 1968 Level of Living Survey is a study of the full adult Swedish population, in which approximately one out of a thousand individuals born between 1892-1953 (15-75 years of age) were randomly sampled.* The total of 5,923 completed interviews (non-response rate 9.2 percent)** included a comprehensive range of questions designed to construct indicators of levels of living on nine components. The survey is perhaps the most comprehensive questionnaire study covering this range of social indicators available:*** 1. Employment and working conditions / 2. Economic resources / 3. Political resources / 4. Schooling / 5. Health and the use of medical care / 6. Family origin and family relations (social resources) / 7. Housing / 8. Nutrition / 9. Leisure.

Only a segment of this unusually comprehensive and nationally representative data base is relevant to our analysis. The work-leisure investigation is restricted to the non-rural population age 18 to 66 which reduces the sample to 3,284, of whom 2,392 have jobs. Of these, the 1,466 male workers represent the population used for most analyses. The 926 female workers are utilized to test several major hypotheses in Chapter 5. Longitudinal data 1968-1974 have just become available but is not used in this analysis.

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* The base for the random sample was the Swedish "15th of the month" register, in which every Swede born on the 15th day of any month is assigned a reference number for use in later statistical analysis. In fact the survey sample is a random sample drawn from 18 separate randon population samples drawn over a $1\frac{1}{2}$ year period.

**For a more complete description of the questionnaire see separate chapters. A complete description of the goals and development of the survey is contained is Om Levnadsnivaundersokningen, Sten Johansson, Laginkomstutredningen, Allmanna forlaget 1970.

***Reports have been compiled on the demographic distributions of most of the indicators. A complete list is included in the bibliography. Particularly relevant for this study are the reports by Lars Sundbom on working conditions and Agneta Lundahl on leisure activities.

This Swedish data base contains over 900 variables from raw questionnaire responses and Swedish social register sources. From this data three general groupings of variables were assembled and analyzed to construct the aggregate indicators used in this report, job content dimensions, the leisure behavior (and mental strain dimensions). There is also data available about: community and social network (limited); family and community responsibilities; individual family background; and social status, income, education.

Measurement Problems Arising from Use of Pre-Existing Data Bases: Need to Demonstrate "Construct Validity"

Several major methodological and theoretical problems are introduced when hypotheses are tested with data that was not precisely designed for their measurement. Instead of one precisely formulated and measured question to test the hypothesis, alternative research procedures must be employed. Several related questions may have to be culled from the data and used in multiple hypothesis tests, or clusters or factors of variables may have to be used to approximate an underlying concept. While use of these techniques keeps us in good statistical company, it does not itself solve the primary problem of inexact measurement. To insure construct validity of the findings several special research strategies are utilized. The distribution of the job content dimensions is investigated for the full employed population of Sweden in 1968 (non-rural) broken down by industry categories, social class, working hours, sex, age, urban location, and labor union affiliation.

Plan of the Remainder of the Thesis

In Chapter 2A a "coping model" of job socialization is developed which includes both characteristics of the working environment and characteristics of the individual. Theoretical issues are explored.

In Chapter 2B we search for data to measure the dimensions of the model in the Swedish data, with some assistance from factor analyses. The job content indicators (additive scales) are tested for statistical validity with Guttman and Cronback alpha tests. We review other job content literature, and flaws in some of the indicators are examined. Construct validity of the indicators is also reviewed in light of related findings, and the distribution of job content in the Swedish population.

In Chapter 3 the leisure activity indicators are identified using a varimax factor analysis. Social relationships with friends and relatives are separated from leisure activity, and political activities are added. Properties of "summary" indicators of active leisure (the first unrotated factor variety in leisure) are discussed. Ambiguous correlations are resolved, and the stability of the "leisure patterns" in age and sex subpopulations is investigated.

In Chapter 4 the relationship between job content and the leisure/political activities is tested. We first perform a short univariate analysis and then test the interactive job content model (job demands and job discretion). We review the impact of alternative measures of job demands (psychological and physical) and job discretion (intellectual and schedule freedom). Aggregated groupings of the eight leisure factors, on the basis of their association to job content, are developed, and related to dimensions of "active" and "non-active" leisure.

In Chapter 5 alternative explanations for the relationship between work and leisure are examined:

a) We test to see whether the associations persist when individual characteristics are included (childhood life experiences, education). The relative strength of individual-family background and work experience duration is tested.

b) The second requirement of job socialization, that work-leisure associations strengthen with work experience, is examined along with other age related processes.

c) We test the strength of community and social relationship variables in contributing either to participation in leisure, or to the linkage between work and leisure variables.

d) We test for a linkage between work and leisure on the basis of family income, wages, social class (and education) to assess the relative strength of the hypothesized process of "socio-psychological" functioning. We discuss the implications of adding job content to income and status measures for a multidimensional model of "occupational impact."

e) The conclusions and limitations of the research are reviewed in light of several relevant implications for public policy.

TABLE I-1 COMPOSITE VARIABLES:
JOB CONTENT -- LEISURE PARTICIPATION/MENTAL STRAIN*

I. **JOB DEMANDS**

- A. PSYCHOLOGICAL JOB DEMANDS
  - 1. hectic job
  - 2. psychologically demanding job
  - (3. psyc. exhaust. aft. wk.)
- B. PHYSICAL JOB EXERTIONS
  - 1. 125 lb. lift
  - 2. other phys. demands
  - 3. outdoor/indoor
  - 4. temperature
  - 5. dampness
  - 6. dirty
- (C. PHYSICAL JOB HAZARDS)

II. **JOB-PRESCRIBED FREEDOM OF ACTION**

- A. INTELLECTUAL JOB COMPLEXITY
  - 1. Monotonous/repetitious
  - 2. Skill level (Job's educ.)
- B. PERSONAL FREEDOM AT WORKPLACE
  - 1. phone calls
  - 2. visitor -- 10 min.
  - 3. errand -- 1/2 hr.
  - 4. punct. no concern
- (C. INSTITUTIONAL AUTHORITY & SECURITY)
  - 1. indiv. contr. (only)
  - 2. fixed wage/1 mo. notice
  - 3. fixed salary
  - 4. supervisory author
  - 5. ownership

III. **(JOB SOCIAL RELATIONSHIPS)**

LEISURE PARTICIPATION

1. INTELLECTUAL, COSMOPOLITAN LEISURE
   theaters, books, travel, study circle, musical instruments, restaurants
2. ACTIVE PHYSICAL LEISURE
   sports partic., sports organiz., hunting, fishing
3. EVENING SOCIAL LEISURE
   movies, dancing, restaurants
4. "SUBURBANITE" LEISURE
   gardening, summer cottage, hobbies, non-polit. organizat.
5. RELIGIOUS ORGANIZ. LEISURE
   church attendance, religious organ., temperance unions
6. MASS CULTURAL LEISURE
   home/advent. magazines, window shop, auto excursions
7. ELITE POLITICAL ACTIVITY
   speak at meetings, writing articles, attempts to influence, writing complaints
8. MASS POLITICAL ACTIVITY
   participation in demonstrations, (non-passive) membership in trade unions or political parties
9. VARIATIONS IN LEISURE
   number of leisure categories with some participation

RELATED SUPPLEMENTARY VARIABLES IN THE ANALYSIS

I. **"INDIVIDUAL DIFFERENCE"**
CHILDHOOD LIFE PROBLEMS
EDUCATION
FAMILY EDUC. BACKGROUND

II. **DEMOGRAPHIC LIFE CYCLE**
SEX, WORKING HOURS
(AGE), MARITAL STATUS

III. **COMMUNITY SOCIAL NETWORK**
URBAN SCALE
FRIENDS, RELATIVES

IV. **S.E.S.**
SOCIAL CLASS
FAMILY INCOME
WAGE
EDUCATION

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*MENTAL STRAIN INDICATORS

1. GENERAL TIREDNESS
   morning, evening, daytime
2. SLEEPING PROBLEMS
   & sleeping pills
3. DEPRESSION - ANXIETY
   & tranquilizers
4. HIGH BLOOD PRESSURE, DIZZINESS
5. ACHES AND PAINS
   aches in upper back, lower back, hands and arms

Chapter Two

A Model of Job Content and its Measurement

Section 2A: Development of the Job Content Model

In Chapter 2A we address several theoretical issues that commonly arise in the discussion of work and leisure: the necessity of examining both environmental and individual level data; the problem of overlapping social roles; and the concept of work "constraint" and its implications causality. We use them to establish boundaries of the model of "social-psychological functioning" which describes the impacts of work on leisure. The model is summarized on page 55, and discussed in greater detail in four subsequent sections. In Chapter 2B we search for empirical measures of the job content dimensions in the Swedish data.

2A-1 Theoretical Issues in Bounding the Work-Leisure Problem.

> **"Work is when you have to do it, leisure is when you want to do it."**
> **Bricklayer, Ealing, England** (Young & Willmott, 1973)

The quotation above alludes to the difference in "constraint" between work and leisure. We postulate that this difference in the degree of "externally (socially) imposed restriction" represents the primary distinction between work and leisure. More precisely, "leisure" is that space of time which is free from the constraints of a socially defined work role. (There is a psychological counterpart to this definition on page 52.)

The concept of leisure time we propose refers not so much to the content or quality of the experience, as to the socially defined boundaries of an activity. The boundaries of "social roles" are usually clearly demarked by differences in attitudes that apply: "9 to 5," "quitting time," "at the office," "nose to the grindstone," and one is spared indecisive vacillation about knowing whether one is at work or leisure.

However, for individuals in modern industrial societies the sphere of activity where one "has to do it"—i.e., where one is under external constraints—occurs in other situations which overlap "leisure time." There are a multitude of social roles with obligations of varying degrees of rigidity. The clearest example of a non- job, fully obligated activity is child rearing and provision of secure home for that activity. The individual's responsibilities to the community are usually less significant, although increasingly in modern "welfare states," important services provided by the community bring the individual into socially more demanding contact.

When we review the span of time when the individual in industrial societies is truly unconstrained the amount of time is small.* Nevertheless we could not conclude that work activity in general has become so unfettered, or "leisure" so filled with obligations that there is no difference between them, as Dumazdier, Young and Willmott point out. The bricklayer's quotation still summarizes the difference: "Work is when you have to do it."

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*Sebastian DeGrazia, Of Work, Time and Leisure in fact maintains that in spite of decreased working hours, total obligated time has increased, leaving modern man busier than ever (also Stephan Lindner in Harried Leisure Class, 1971). Yet it is unlikely that modern suburban families would choose to return to the sweat shop 12-hour day of "working life" in the early industrial revolution. While modern society brings many obligations, they are less severe than factory work or slave labor, and occasionally are flexible enough to be quite indistinguishable from many leisure pursuits.

**a) Dumazdier, in Towards a Society of Leisure (1967): "In time budget studies [one must]...distinguish between the degree of compulsion of the different obligations and the degree to which they overlap with leisure.... Incomparable difference exists between time on the job and time spent in household work.... The first is practically incompressible. The duration of each task has been measured without regard to the rhythm of each individual.... Time devoted to housework is extremely elastic. Delays...subject to practically no control...according to the will or caprice of the person [like the traditional artisan].
b) Young and Wilmott, Symmetrical Family (Routledge and Kegan Paul), p. 207. The distinction between work and leisure often appears to be a greater problem for the social scientist than the man on the street: "...the disagreement between the authors drawn upon by Parker, and added to by Pieper would have made it ridiculous to assume that [work and leisure] meant the same to them as to us or that they would all concur with each other. We therefore tried to discover what they did mean in the main survey...we hoped we might, by interpreting what [the respondents] said, find out something about what they meant by the words. Most people seemed to regard the key words [work and leisure] as opposites that could properly be distinguished from each other."

If this greater constraint during work time is a fact,* it has causal implications for our analysis. Bertrand Russell observes (1929) that in an interdependent system—such as we envision for work and leisure—it is the variation in the most constrained element that must be considered the "cause" of change in the system. The methodological implication is that if we would like to measure what is really an "effect" of the job we should look, not at behavior at the work place, but at behavior outside the job—after the "constraints" of the working environment are suspended. The difficulty of finding a truly separable area of "effects" may be one of the problems plaguing job satisfaction research.**

We have thus identified several requirements for the model of "the impact of work on leisure." If we are going to look for "effects" we must choose a sphere of activity which is both separated from the direct processes of work and less "constrained" than work. We must also demonstrate that this "leisure" sphere is not primarily determined by the other obligations (such as family work). Finally, we must propose a plausible mechanism by which significant aspects of working life might manifest the

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*Some anthropologists might argue that leisure-time behavior is determined by social custom at least as strongly in leisure as it is during the work day.

**It must first be proved that a feeling of "satisfaction" or acceptance of the activity implied by the job is not a necessary part of that job's performance. Otherwise "job satisfaction" is no different from the other "requirements" of working life. The "effect" can only be judged when the "constraint" is lifted. Thus measurement of the impact of working conditions on life on the job, usually concentrates on study of work's less constrained moments: coffee breaks, general feelings of satisfaction, informal behavior.

"effects." The necessity of developing a plausible "model" of the social-psychological effects of work is widely acknowledged.* Therefore we develop one at some length even though its propositions somewhat surpass our data.

At this point it should be noted that this study does not investigate an obvious reciprocal question: to what extent do behavior patterns observable in leisure "cause" changes in the occupation system. Thus, we overlook the historical evidence which suggests that incipient changes in the occupational system are foreshadowed by activity patterns in the society's leisure time.**

The work vs. leisure distinction we discuss also appears to be clearer in urban, industrial societies. The pressures for differentiation of all institutions is reflected in the separation of the daily and yearly calendar into clearly demarked periods for working. When working activity is rigidly disciplined, the contrast between work and leisure increases. In agricultural and pastoral societies, by contrast, the work process has flexible time boundaries, and is interspersed with periods of relaxation.*** Thus, our study should be relabeled: the impact of work on life outside the job— in urban societies. We exclude the rural population from further consideration.

**A case could be made for the hypothesis that society's emergent new occupations appear amoung the "goal-oriented and socially involving" leisure time activities. For example the profession of teacher grew most rapidly in connection with the "Sunday Schools" of the early industrial revolution(Thompson, 1963). More recently the professions of community social worker and (Dagens Nyheter, Stockholm, 2/8/74) reacreation and cultural workers.

***Suzanne Berger's (1972) description of work and leisure among 20th-century peasants in the French provinces suggests that they still have a homogeneous pattern of life today; evidence that the work-leisure distinction has not occurred because of simple historical evolution but exists in modern society: "For the peasant, work life and work time are not separated from the rest of the day...active work and rest are intermingled throughout the traditional schedule: the peasant rests in the fields between rows, he socializes at the fair while he sells animals, he putters in the barn after nightfall...." The result of the flexible work schedule in agricultural society is a reduction in formally organized leisure. Although there are many unfilled hours in rural life no "fixed" hours can be set aside for outside activity and there is little potential for voluntary organization membership or political association.

* Hackman and Lawler (1971,p.260)"the almost total absence of any systemmatic conceptual or theoretical basis for the studies [of job enlargement] As a result,after dozens of experiments,little cummulative knowledge has been gained."

Several Difficulties

One problem for the study is that it may be difficult to find a comparable set of dimensions in both work and leisure that allow testing for the "carry-over" of behavior patterns. We must develop a framework of dimensions for the social role of work that is broad enough to categorize dimensions of experience in other spheres--such as family, education, and leisure activity.

The next problem is to determine in detail what aspects of the job should be measured to test for the hypothesized effects. The mere "boundaries" of the social role data (time at work, time spent doing housework) do not always clearly distinguish the content of work activity. Thus we cannot simply investigate time budgets, i.e., work time, time at meals, left-over-time categories. Because of "overlaps" between categories of work and leisure,* we must investigate aspects of the quality of experience--the "content" of work activity.

The degree to which work is different from play or leisure is not constant but obviously varies according to the nature of the job. Higher level business executives often have considerable time for self-directed activity in their jobs, and the distinction between work and play blurs (Reisman, 1950): a golf game may be the backdrop for important negotiations, or a "new product" planning conference may allow considerable energetic fantasy. However, for the assembly line worker the difference between a machine regulated pace at work, and the "leisure" world, is overwhelming. The principal reward of the job is often the fact that it ends—precisely at quitting time.*

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*Young and Willmott, op. cit., define an "obligation" scale when they ask respondents to identify how much like work and how much like leisure each of a series of activities is (p. 210).

2A-2: How Might Work Experience Affect Behavior in Leisure Time?

In Chapter 1 we found that three categories of job characteristics important in the literature were job demands, job discretion, and job social relationships. We find evidence below that "social role theory" also implies broad role dimensions of demands, discretion, and social relations. While the same indicators that measure the content of life in the office or factory cannot simply be adopted as a tool for analysis of housework, or school work, or retirement activity, these three types of dimensions are necessary components of a wide variety of social role activity patterns. Since social role theory also outlines a process by which behavior patterns are developed (internalized) within the individual, we shall review it first before going on to our model of socio-psychological functioning.

The suggestion that we must search for the "impacts" of work in a separate sphere of activity places a special demand on the model of social roles. It must be able to describe the impact of a role on behavior patterns beyond the borders of the specific role situation. This requirement of "action at a distance" does not at first appear to fit easily into the conventional sociological discussion of social roles, in which each social situation is governed by its own set of socially endorsed principles. Generally the power of the role to constrain behavior is seen to emanate from the explicit social approval of the other individuals in the situation.* However, sometimes the other individuals are not present. The standard explanation of why a social role has impact on the individual when the other members of the group are absent is that the elements of the social role are "internalized" within the individual, and thus govern his behavior even when the social environment exerts no direct constraint. This concept of "internalization" of the standards of social behavior both suggests that behavior patterns which extend beyond their initial boundaries are a necessary basic concept of behavior pattern development. This property hints at the potential of the process of adult socialization at the work place. "Action at a distance" may occur across time as well as across life spheres. Behavior patterns internalized on the job might socialize the individual into patterns for future action.

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*Young and Willmott, in Symmetrical Family, present statistics which show the effect, in terms of "interest in the job," of this difference in opportunity for self-directed activity within the socially defined work role: 47% of managing directors responded they obtained most satisfaction in work vs. 10% in leisure; for working classes 14% got most satisfaction in work vs. 48% in leisure. This finding parallels Robert Dubin's (1956) research on central life interest of the working man: most of the working class respondents responded that their central life interest lay outside of work.

In order for the social environment to have an effect on the individual, it must, as Kurt Lewin prescribed, enter within his "psychological field" (Lewin, 1951). Parsons acknowledges this requirement of social-psychological explanation in Towards a General Theory of Action when he discusses in detail "how" the processes of internalization and socialization of role expectations occur.**

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*In such cases elements of a social role might include the values, norms, and beliefs that are socially accepted.

**Parsons uses the model of psychological behavior proposed by his colleagues: basically a Freudean model. We use a different psycol. model.

The main criterion of a "role internalization" theory is that the social and the psychogical levels of explanation be "congruent." Thus there must be counterparts for social role prescriptions at the individual level; and the interactions between these dimensions must imply at the individual level, processes of behavior that are consistent with outcomes observed at the level of the social environment.

We can interpret our theory of job dimension in this light. If there are environmental job demands there must be individually perceived demand. Parsons (1951, p. 24) notes that performance of role expectations may establish a "strain"* within the individual: "experienced stress." The amount of stress induced, while dependent on the social role expectation or demands (such as job task output), is not completely determined by them, but also depends on the individual's "personality": whether he has "learned" that a role demand implies much effort, whether he feels the role demand can be easily accomplished, or whether he unconsciously avoids perception of the role requirement altogether.

By the same token another dimension of the social role of work—job discretion or range of freedom of action—must have an individual counterpart: job discretion as perceived by the individual, which is linked to, but not determined by, the social environment. The individual's perceived freedom of action may be determinant of how much strain he actually experiences. Perceived freedom introduces the psychological concept of play. Unlike the environmentally defined "leisure," the existence of play depends on the individually defined feeling of external constraint (yet the category of play often coincides with leisure). The critical factor that distinguishes work from play is the presence of the individual's perception of constraint, as opposed to socially sanctioned constraint.*

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* This usage of the word is not the same as our usage in the next section

The discussion above introduces a roster of relevant factors that should be considered in a theory of "social psychological functioning" at work. Excluding for the moment job social relationships, we should include both environmental and individual level job demand and discretion data:

I. a. The obligations for output and performance demanded by the job.
   b. The range of control allowed the worker in determining the conditions of the work process and work experience.
II. a. The individual's perception of his job demands.
   b. The individual's perception of his freedom of action.

It must be noted at this point that the analysis of "individual personality orientations" is seriously limited in our data to a discussion of the individual's experiences during childhood and his family circumstances.

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*The restraint on freedom of action is generated by the individual's perception of his needs for successful functioning in the external world. Thus, internalized norms of behavior or biological need, as well as explicit control, can differentiate a "work" situation from a play situation. If the individual "wants" to do something, i.e., indugles in behavior that reflects his own will and perceptions of control, that activity, which may be similar in its format or appearance to work, can be play instead of work. Our definition of play is that it represents activity not under the direct control of outside forces, and thus the relation to individual or social "function" is almost by definition unconscious. It may reflect the "indirect" or delayed impact of external forces, however.

Thus, we do not touch at all on aspirations* or attitudes which are undoubtedly important in their own right (but, we feel, hard to measure). Our data is limited to actual behavior or circumstance on the job, actual behavior in leisure, and actual behavior that occurred during childhood—when the "enduring" characteristics of an individual's personality may well be formed. Another important limitation is that the "intended" results of the work process, its "output" or production, while of obvious importance, are not the focus of our dissertation.** Our real dependent variables are the "unintended" consequences of work on the individual: changes in the worker's mental state and behavior patterns that occur because of work activity.

In the discussion below we will attempt to "reinterpret" some existing social and psychological models of behavior in light of our hypotheses. The discussion is divided into two parts. We first review the literature on a relatively well researched area: coping with stress and problem-solving. We use this literature as a foundation for the second part of the theoretical model: a mechanism of job socialization which can induce active and passive styles of behavior. It is really this theoretical discussion which is crucial for the work-leisure analysis in Chapters 4 and 5, but it relies on a less well developed literature.

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*Parsons notes (1951, p. 18) that the social role may or may not fit with the individual's potentials, leading to conformity or rebellion. Caplan et al. (1975) use the "fit" between aspirations and job situation as the "cause of job strain." Parsons also notes that some people transcend the role and make their own goals.

**Oldham, Hackman and Pearce (1975 Yale School of Organization and Management) discuss both job satisfaction and productivity measures in relation to changes in job content. A list of studies about the relationship between job satisfaction and productivity is discussed in Vroom, 1964; Perrow, 1970; Gross, in Levine & Scotch, 1970. See also Zalesnik, Christian, Roethlisberger, Homans, "The Motivation, Production and Satisfaction of Workers," 1958, Harvard Business School (case study).

2A-2a. A Summary of the Model of "Social-Psychological Functioning"

Our model deals with the joint impact of Job Demands and Job Discretion—conditioned by characteristics of the individual worker's background. First we will identify four broad areas of literature which discuss situation demands and situation discretion (even though they do not directly apply to work situations), and use them to construct the broad outlines of our simple model. In a subsequent section we will examine specific findings in greater detail, and speculate on the effects of differences in individual personality.

Our first observation is that the combination of Job Demands (or environmental stressors in general) and Job Discretion yields several quite different groups of effects: The first pair of findings deals with symptoms of mental strain:

A. The "Life Stress" literature

This body of literature concludes that increasingly demanding and stressful situations will lead to increased symptoms of mental strain.

B. The Stress-Coping literature

This body of findings shows that increased control over the work situation will reduce experienced strain in the worker, holding the job or environmental stressors constant.

Both of these findings can be incorporated into the following equation:

$$\boxed{\text{Strain} = \text{Job Demands} - \text{Job Discretion}}$$

This is a "problem-solving" model: the more problematic situations, and the less discretion over coping solutions, the more strain the individual will experience.

There is another trend in recent psychological literature which is based on the observation that "stress" does not always lead to negative impacts on the individual. Indeed, challenging and exciting situations are an ingredient in learning and self-realizing behavior. The "outcome" or dependent variable in this literature is the level or range of activity engaged in by the individual. Although the experimental findings are less complete in this area, the literature on "learned helplessness" (and its rival theories) provide an important base of findings:

C. The Learned Helplessness Literature

This body of findings suggests that (stressful) situations where the individual is prevented from exercising natural initiatives and discretion will lead to a permanent reduction in range of future behavior (passivity). A separate set of findings notes that increases in activity level may also be generated in stressful situations. In this case the individual must be encouraged to increase his range of considered choice.

D. The Physiological Deficit Theory

An initial contention of this theory is that observations of learned helplessness are merely the transient effect of depletion of certain neuro-chemical substances in the body. Although this contention has been disproved through the demonstration of long-lasting "helplessness" effects, this literature does raise the important question about whether transient or permanent effects are being observed (we discuss the time issue in greater detail on p. 77). More important for us, this body of literature provides further evidence that the changes in activity level depend on both the "stressfulness" of the situation and the nature of the constraint imposed.

These two findings can be summarized into another equation which relates activity level to Job Demands and Discretion. However, we are unable to determine the sign of the Job Demands quantity, and thus we do not know whether the model is additive or multiplicative.*

$$\Delta \text{ Activity Level} = \text{Job Demands} \overset{?}{+\ X} \text{ Job Discretion}$$

We can construct a simple diagram in which all of the above findings relating to combinations of situation demands and discretion can be combined into a set of hypotheses about the impacts of the work environment:

1. "Heavy" Job: High Job Demands w/ Low Job Discretion → High Strain + (?)
2. "Leisurely" Job: Low Job Demands w/ High Job Discretion → Low Strain
3. "Active" Job: High Job Demands w/ High Job Discretion → High Activ. Level
4. "Passive" Job: (?)Low Job Demands w/ Low Job Discretion → Low Activ. Level

If we neglect the two question marks for the time being (1.-the "learned helplessness" contention that strain and passivity may be equivalent; 2.-behavior change under abnormally low stress), then these four "modified" predictions can be incorporated into the following table:

	Job Demands	
	Low	High
Job Discretion Low	"Passive" Job = reduction in activity level	"Heavy" Job = increase in mental strain
High	"Leisurely" Job = reduction in mental strain	"Active" Job = increase in activity level

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*An additional requirement is necessary to insure the usefulness of the findings above: Job Demands and Job Discretion must represent independent measures (as well as perceived stress and discretion at the individual
(cont'd.)

It may well be that the simple diagram above represents a "forced fit" of the four broad areas of findings. The table is certainly no more than one way of combining them, and indeed, it introduces an additional postulate that is neither present in the findings above, nor even accepted by some of the prospective hypotheses in the literature:

> The Stress-Coping mechanism (Stressor minus Discretion) and the Activity level mechanism (Stressor plus/times Discretion) are—at least to some degree—independent.

In support of our hypothesis that the activity level and the mental strain mechanisms may be at least somewhat independent, we preview one of the findings from Chapter Four: for working males (but not in the population as a whole) symptoms of depression and other indicators of mental strain are almost completely uncorrelated with the measures of activity level (participation in leisure and political activity). We do not test in this dissertation any interactions that may occur between the strain and activity level outcomes (such as: workers learn on their job stress coping mechanisms that can be used in leisure as well as in work).

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level). We do find evidence that, while correlated, these dimensions are conceptually distinct since all combinations of them occur in reality. Furthermore, the nature of the correlation might be to understate effects of the mental strain mechanism: high psychological job demands are correlated with high job discretion—not the low discretion that is associated with mental strain.

2A-2b. The Problem Solving or Stress-Coping Mechanism: Detailed Discussion

$$\boxed{\text{Strain} = \text{Job Demands} - \text{Job Discretion}}$$

A good review of model of stress-coping literature, and a synthesis of a new "model of stress" is presented by Scott and Howard (in Levine and Scotch, 1971):

> The model we have developed is based upon an an analysis of human functioning in problem-solving terms.... Mastery requires resources the organism can apply in working through a particular problem. A resource may be considered as anything that contributes to the resolution of problem situations.
>
> During the time in which the problem is being dealt with...the organism experiences tension. When problems are not solved, however, tensions persist...[which] gives rise to a second-order problem, that of dealing with unresolved tensions.
>
> Finally, there are two basic courses that can be taken by organisms experiencing undissipated tension:...assaults to physical integrity...total exhaustion. It may be possible to temporarily dissipate some of the accumulated tnesions through a variety of physical psychological and social mechanisms of tension release.

Interaction of Job Demands and Job Discretion

Job demands are generally described by sociologists as expectations (Parsons, 1951, p. 18) or "obligations" (Linton,1936) of the work process. Our model's structure is such that the job demand is one of a chain of factors (along with the individual personality orientation below) which jointly lead* first to "stress" and then to symptoms of mental strain (the dependent variable).

Our first proposition is that, in environmental terms, the highest "strain" results in situations where the demands of the job are high and the discretion permitted the worker is low. In our model, if stress induced in the worker cannot be resolved by either internal or externally directed action, "strain" or "unresolved strain" results. There is a growing trend in the literature supporting the interactive significance of this second environmental dimension in conjunction with job demands: the range of individual discretion in problem-solving at the workplace. Using evidence drawn from physiological measurements of work reaction, Frankenhaeser and Rissler (1970) conclude that the adrenaline secretion (which is associated with a feeling of stress) in workers facing difficult tasks** increases when the worker is also constrained in the range of problem solving options he is permitted.*** A similar conclusion can be drawn from William F. Whyte's classic descriptive data about the experiences of the restaurant worker (1948): it is the restaurant worker who does not know how to "control" her customers' behavior who experiences the greatest strain on the job (crying spells), given a constant level of customer orders.* Kerckhoff and Bac (1968) suggest that it is when the action that the job requires cannot be taken that the severest symptoms of strain occur(fainting, social contagion). When the objective requirements of the situation cannot be routinely discharged, any one of a full range of "unintended outcomes" might occur, depending on the severity of the requirements. Grinker and Speigel (1945) discuss high strain situations and basic personality changes that result from "inescapable" war-time trauma. A less acute range of symptoms of strain is investigated in our study and in recent U.S. work environment studies(Caplan, et al; 1975: depression, dissatisfactions, somatic complaints,*** endocrine reactions).

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*We do not attempt to identify either the environment or the individual in this model as the sole or prior "cause." They are both contributing elements to the "results" we attempt to explain. There have been good discussions of the disutility of omitting either the social-environmental or the individual personality components of this interdependent process. See respectively Perrow, C., Organisational Analysis: A Sociological View, 1970, Brook/Cole, or Argyris, C., The Applicability of Organizational Sociology, 1972.

**Nix, H., and Bates, F., "Occupational Role Stress," Rural Sociology, March 1962, pp. 7-17, suggest that role strain will be highest when role expectations are high, and the resources for attaining them are low.

***Ulcers are often the result for animal subjects when stressful shock is administered to a constrained subject(Weiss; 1968,1971 in Seligman, 1975).

It is not only the freedom of action to cope with the accomplishment of the formal work task that relieves strain; it may also be the freedom to engage in the informal "rituals" which serve as supplementary coping mechanisms during the work day. Lack of freedom for informal activity may be another factor which explains the high frequency of psychological complaints reported by workers who have no freedom to engage in informal coping processes on machine paced** assembly lines (Kornhauser, 1964) and the displeasure* with rigid rhythms of working life (Walker and Guest, 1952). Firth (1939, p. 182), studying the Polynesian fisherman, also finds that the periodic rituals and chants that punctuate the working routine alleviate strain at times of high anxiety, and that if these coping mechanisms (which occur during the least constrained part of the work day) are prevented, there can be general collapse of the social organization of the work situation.

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*Parsons notes that the "pressure" of role expectations can lead to strain (1951, p. 24) on the individual.

**Johansson, G., and Lindstrom, B., 1975, Dept. of Psychology, Stockholm University (in press). In a laboratory experiment of worker reactions to machine pacing vs. individual control of work pace, man-controlled pace was judged as "preferable," was associated with a lower heart rate. Performance ratings remain relatively constant.

***Fröberg, J., Karlsson, C., Levi, L., Lidberg, L., and Seeman, K., "Conditions of work," Archives of Environmental Health, 21 (1970), 789-797. "Job demands were increased by introducing piecework incentives. Biochemical stress reactions occurred, and one half of the group reported fatigue, backache, and pains in shoulders and arms."

The Impact of Personality: Perception of Stress and Feeling of Situation Mastery

In our model job demands represent for the worker an "imperative" for future resolving action.** The crucial psychological issue is that all individuals will not perceive an objectively similar situation as equally pressing for action or conducive to threat, and thus "stressful" in our definition***(Gross, in Levine and Scotch, 1971, p. 56) (Janus, 1958;

---

*Caplan et al., 1975, p. 132: Boredom and dissatisfaction highest among workers on machine-paced assembly lines.

**A physical analogy of a spring may be used to demonstrate the generation of stress: the spring is stretched at the time of 'desire' and remains in tension until released at the time of resolving action. Pursuing the spring model, the "potential" energy of the stress implies both periodic normal response rhythms for stress management (sleeping, dreaming, work pauses and rituals, joking, etc.). Larger stresses may produce a strained response such as mental health deterioration, repressions of stressful realities, or behavioral changes where normal response rhythms are permanently altered (the adaptation of stress coping styles). The spring is stretched to a new configuration, but may still retain its elasticity—to a point.

***Psychologists such as Lazarus (Lazarus, R.S., Psychological Stress and the Coping Process, 1966) and Janis have shown that the magnitude of psychological stress actually perceived (as measured by physiological reactions: skin resistance, hormone secretion, etc.) is a function of both the stressful event, anticipatory worrying, the individual's tendencies (con't.)

Lazarus, 1966). Lazarus concludes that individual personality characteristics act as a mediating factor between "stressors" of the objective, external environment and individual symptoms of "stress." However, there is also evidence that the type* of stress response represents the primary individual variance in stress effects, rather than the very existence of a response (or its time pattern).** Some response can be found across a very wide range of individuals if different types of symptoms and aggregated time intervals are considered. It is not clear which personality characteristics would overstate or understate*** an average individual's relationship between environmental demands and mental strain.

The major problem lies in determining what type of personality characteristics are important. Although researchers in all fields of environmental health inquiry cite personality characteristics as an important modulator of stress perception and strain effects, 30 years of research have still not reliably identified "the" personality variables in question.****

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toward defensive denial and avoidance. Detailed measurement of this last factor could give a much more reliable measure of the "objective stressfulness" of the work environment. Janis (1958) discusses the extra burden of anxiety faced by a major surgery patient after the operation, if he has not done the "work of worrying" beforehand. It must be noted that the total strain from the operation (before and after) could be more nearly constant across individuals.

*We review evidence in Chapter 5 and in Appendix I that the manifestation of strain may differ from individual to individual, but that across a broad range of symptoms, job demands can incite some type of strain response.

**Anticipatory worrying shifts the impact of the perceived stress or strain to an earlier time, and may "level out" the stressor impact.

***Since one personality measure, "denial" (Crowne-Marlow Need for Social Approval Scale), measures tendency to deny socially unacceptable states, the individual may well not deny having a stressful job, but deny symptoms (such as depression and irritability) leading to an understated correlation between stress and strain.

****Kahn, R., and Quinn, R., "Role Stress, A Framework for Analysis," in Alan McLean (ed.), Mental Health and Work Organization, 1970, p. 91. Often mentioned personality traits: agression; denial of stressors or (con't.)

Some authors cite denial of stressful reality* as the crucial characteristic through which the individual modulates his reactions to events in his external reality (Lazarus, 1966, p. 49); others cite denial of socially unacceptable behavior.** We follow the direction of these findings but develop an expanded interpretation of the personality characteristic in terms of a *feeling of mastery****

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denial of "bad self"; and flexibility-rigidity and perceptual mastery. The most comprehensive U.S. study of job demands and worker health 1975 (n = 2010 male employees), Caplan *et al*. (1975, p. 77), conclude: "Our second hypothesis, that personality characteristics influence strain, does not find strong support in the present [main effects] analysis of our data." One chapter of the N.I.O.S.H. report on "Personality and Emotional Factors" (*Problems in Occupational Safety and Health*, Report H.E.W. 75-124, 1975) takes the position that individual characteristics are the "cause" of much industrial illness, and then searches literature to identify these characteristics. No reliable indicators are found except that an individual exposed to stressful life events is more "accident prone."

*Miller and Swanson (*Inner Conflict and Defense*, 1960, p. 205). Several aspects of behavior might be related to the "denial" mechanism: actual feelings of anxiety or stress would be reduced through "denial" (Funkenstein, King and Drolette, 1957), but unconscious "unresolved strain" may remain that causes the individual to be more susceptible to mental and physical illness. The women in *June Bug* (Kerchoff & Bac, 1968) who were most often affected (fainting) by the contagion were high on personality inventories factors (MMPI, Cornell) measuring denial, and in fact later denied they had been affected. Miller and Swanson distinguish "denial" from more "selective" distortions of reality among the middle class that are linked with middle class patterns of child rearing and more active social participation. Denial is a simplistic form of maximal distortion that would not be acceptable for the greater social participation which requires understanding the other person's point of view. "Turning against the self" is mentioned as a typical example of a more complex but less distorting personality characteristic.

**Caplan *et al*. in their recent study of U.S. worker health did not find significant first-order effects for flexibility (California Personality Inventory p. 46), or a "hard driving" personality, although denial of bad self was substantially (r = .20 to .30) correlated with *low* mental strain reports (p. 77). They suggest that a multidimensional analysis may yield an association.

***Several "learned helplessness" that the crucial deminsions that prevents "passivization" is "perception of control", even if actual control by the the subject does not exist (Glass and Singer,1972)(Klein, Fencil, Morse, and Seligman; in press). Of course, when it is time to test reality only true control over the situation will allow a "feeling of control" to be *maintained*.

(Rotter, 1966). A high feeling of mastery is associated with a reduced perception of stress.* At the same time, a *very low* perception of mastery can lead to the tendency to "deny" the problem's importance (cognitive dissonance, and devaluation of alternatives: Thibaut and Kelley, 1959), and thus, diminished stress at the self-report level. Our hypothesized "personality characteristic" **for stress sensitivity is a *perception of mastery*, and a reduced tendency to "deny" problematic reality (a correlated characteristic).****

For the empirical analysis, however, we must settle for a much broader measure of environmental circumstance that may be *related* to personality: a childhood "life experience" indicator of problematic events faced through adolescence (a la Holmes & Rahe).***

---

*Our empirical findings in Chapter 4 do not show, however, that the "feeling" or reality of job freedom accounts for the difference in self-report of " objective " job demands. Just the *opposite* correlation exists between job demands and job discretion in the *full working* population: high demand reports are associated with high job discretion.

A personality mechanism can nevertheless be operating independently to influence how objective demands are perceived as "stress" (Buck, 1972) "Workers who *felt* that their jobs allowed them to be creative, and use their own ideas...reported feeling less job pressure" p. 121;(also Copper and Marshall, 1975).

**The existence of this broad personality characteristic is supported by the correlation between mastery and denial reported by Rotter (1966, p. 13) that his scale for mastery was negatively correlated to the scale which is used in part by Caplan *et al.* (1975) to measure "denial of the bad self" (Crowne-Marlow Scale, $r = -.16$ to $-.41$).

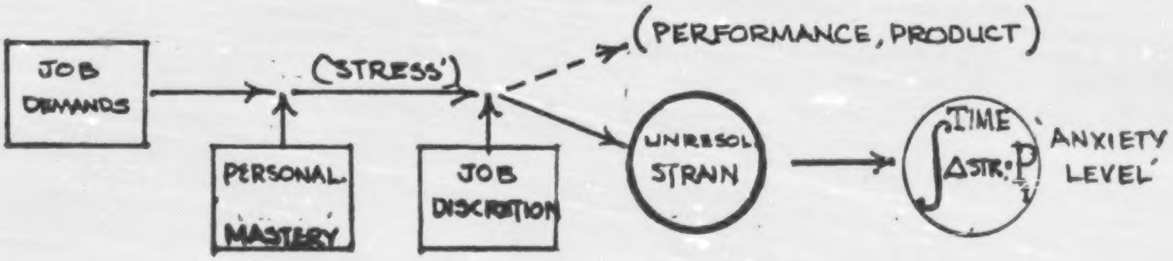
***While there is evidence that such a measure is significantly related to perception of stress and the tendency to "deny" problematic situations, it does not allow differentiation of detailed personality characteristics. Miller and Swanson (1960) give the clue that the general personality characteristic of *denial* may be associated with accumulated stresses during childhood. Discussing denial, or avoidance of reality, they state: "The person is left with no recourse but a final escape into fantasy...or after years of pain, anxiety, or hunger, he is likely to employ denial where others resolve conflict in more mature ways." The authors also predict that child rearing devices in the working class such as the use of harsh punishment would reinforce denial of problematic realities. A traumatic childhood may be associated with reduced feelings of confidence about resolving present problems.

Impact of Unresolved Strain on the "Personality"

We add one further proposition to the model at this point, which predicts the aggregate personality impact of unresolved strain that accumulates over a long period. There is literature suggesting that a major characteristic of personality is the aggregated level of unresolved strain faced by the individual over his life span. Recent studies of life stress and mental health (Holmes & Rahe; Langer and Michaels, 1963) have documented the significance of "accumulated anxiety"* on general health.

To summarize, we suggest that job demands conditioned by individual perception produce "job stress" (not measured directly), and that "job stress" in conjunction with job-prescribed freedom of action to cope with the stress, lead to the measured result "unresolved strain" (as well as "production," which is not directly measured). After long periods of time accumulated strain may lead to increased risk of illness, as well as to changes in "personality."

Diagram 2-1



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*A large body of literature (Gunderson, E., Rahe, R., 1974; Dohrenwend & Dohrenwend, 1974) confirms the generalized impact of overall life stresses on disease, accidents and mental health risk. One conclusion of this research is that life stresses are generalizable enough to have additive and cumulative impacts on strain indicators (Michaels & Langner, 1963): "In short the summed effect of these stresses together is seldom greater (or smaller) than their individual effects. This finding makes it only logical to combine the factors into scores in order to increase their predictive power in relation to mental health risk. Both childhood stress scores and adult stress scores were constructed. Impairment risk was found to be clearly related to the number of stresses reported" (p. 269). Two exceptions to this linearity of impact: the death of a mother appears to be more traumatic among working class children, and "parents' character negatively perceived" generally has a larger impact than other childhood sources of stress.

2A-2c. Inducing Changes in Activity Level or Coping Intensity: Detailed Discussion

$$\Delta \text{ Activity Level} = {}^{*}\text{Job Demands} \ \overset{*}{+/X} \ \text{Job Discretion}$$

The hypothesis of the first section is built on a model of problem-solving: difficult life situations represent a "burden" to be overcome by the resources or range of options under the individual's discretion. There is another, emerging tendency in social-psychological literature that views some of life's taxing situations as challenges and opportunities for growth rather than burdens. A classic statement of this position can be found in Robert White's article, "The Concept of Competence," (1959). The psychological state of the individual in such circumstances is enhanced rather than disrupted by increasing "demands."**

The fact that the "obligations" of life have been conceptualized in both positive and negative terms is not a contradiction for our scheme. We merely take it as evidence that at least two separable mechanisms must be used to describe "psychological functioning" on the job. One attempt to integrate these two effects has been the influential theory of Hans Selye (1956). According to his conception, too much stress is "bad" for the organism; but too little stress also leads to negative consequences.

**There is a substantial literature on children's play suggesting a motivation to increase the "stressfulness" of play up to a certain point: Gilmore (1971), "Play a Special Behavior," observes that children most often select "anxiety-relevant" toys (i.e. toys relating to a hospital for children who have just had a tonsilectomy) vs. "anxiety-irrelevant" toys. However, when additional stress in the form of "auditory fear" is introduced, children then avoid the anxiety-relevant toys.

* The sign of the Job Demands terms and the sign of the association are not really specified completely, by our analysis.

He concludes that there is an inverted "U" shaped curve of optimal effective performance for the organism. The highest level of human performance occurs at a middle level of stress. Thus stress is both positively and negatively related to strain—depending on the level of stress.

There may be several methods for incorporating the phenomena above at the detailed empirical level. Our strategy is more elsborate than the optimal peak" formulation of Selye. Instead of concentrating on "stress" alone, we have identified *two* environmental determinants of strain—demands and discretion. In our model it is the *differing combination* of these elements that leads to the observed duality in the effect of stress.

Our second combination of the job content parameters, the "activity level" or level of "coping intensity," is the *total* of the levels of job demands and job discretion. Both the "obligations" and "range of discretion" of a social role contribute to the individual's potential for active experience and self-growth—which are the focus of the competence motivation literature. Active experience** is defined in our model as experience which requires *both* individual psychological (or physical)energy expenditure, *and* the exercise of decision making capability.

---

*The approaches are probably not mutually exclusive. We agree that too much stress is "bad." Our theory focuses, however, on the range of activity below this point of deterioration.

**In social role terminology the active-passive dimension is a measure of role performance (at least the intended consequences). If high role *performance* represents the high role expectations and high role resources category, then low role performance could be defined as the opposite end of the diagonal: low role expectation and low role resources, or freedom of action. We argue later that this diagonal axis of role performance level is the central dimension of social status rankings. (Blau and Duncan, *The American Occupational Structure*, pp. 117, 118). The authors discuss the fact that performance of the occupational role confers occupational status which in turn confers social status. We suggest in Chapter 5 that the highest levels of role performance (or social status)are associated with the highest levels of status in the society.

If a new "choice" is made leading to a more effective strategy for achieving goals in the future, that new "learned" pattern will be incorporated into the individual's repertoire of coping strategies. His potential activity level in the future will be raised because he has a greater range of solutions to environmental situations: he can risk more, and attain more. On the other hand, if the individual is constantly confronted with situations in which he may not employ his existing capacities, even those may "atrophy."

The Interaction of Job Demands and Job Discretion

Our second major proposition is that new patterns of activity will be more effectively learned if they come as a result of serious and important (stressful) challenge. The individual repetoire of activity will either increase or decrease depending on whether the situation encourages more or less decision making activity by the individual. An alternate formulation (in which stress and discretion* are additive instead of multiplicative) is that the individual's activity level will increase when both situation demands and discretion remain high (active socialization), and will drop when both situation demand and discretion remain low (passive socialization).

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* Job discretion dimension in this mechanism may differ somewhat from the dimension used in the unresolved strain discussion above. The individual must be given the opportunity to exercise choice in accomplishment of the work task; freedom for social interaction or coping rituals may not suffice (Mechanic, 1962, in Levine & Scotch). However, the impact of the "discretion" or freedom of action is suggested by Brim(1966) who notes that the crucial intervening variable in the effectiveness of behavior change in socialization institutions is the amount of free social interaction time with peers.

In general the empirical evidence to support the existence of processes which socialize active and passive behavior is **still thin (but Grinker** and Speigel; 1945). However, the growing "learned helplessness" literature provides several very important insights. **Seligman (1975) discovered that** dogs after receiving a few trials of *inescapable* shock, began to accept shock *passively*-without attempting to escape. This reduced level of active response, in addition was relatively permanent. It was unlearned only with difficulty, and only animals who had 'learned' the escape procedures before the inescapable shock were reliably immune to the "passivization". Human subjects (Glass and Singer; 1972; Hiroto, 1974) who were confronted with repeated demanding situations in which they could exercise no control over the outcome of a stressful situation, **stopped tackling the problem with** 60% reporting as their reason: "since we have no control...why try." (Thorton and Jacobs, 1971).

Weiss (1975) demonstrates, and Seligman 1975 concurs (1975) that both a stress inducing situation and changes in individual discretion are necessary to affect the level of behavior. There is also evidence that "active", in addition to passive, changes can be induced in stressful situations. (Cooper and Marshall,1975) (Marris; 1975; p. 111). In this case the individual experienced an increased range of responsibility for exercise of choice*.

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* The importance of learning to exercise "choice" in a responsible manner is also discussed in the case of childhood socialization settings by Piaget (The Moral Development of the Child, 1932). According to Avedon and Sutton Smith (1971), "games" function as a socializing experience during adolescence. They are exercises in "voluntary control system," in which the implications of exercising choice in unfamiliar (stressful) situations may be experienced.

Together, these findings suggest a multiplicative model where situation-induced stress[*] is positive (or zero) and relative level of control over the situation determines the sign of the behavior change. However, several questions remain unresolved:

Job demands $X^{?}$ ± Job Discretion = ± Activity Level (+ ?)

One question is whether behavior patterns change only by quantum jumps in highly stressful situations, or whether there is long term adaptation to situations of low stress as well. A situation which is salient because it emphasizes how little one is required to do in relation to normal behavior can generate a sort of "negative" stress. Frankenhaeser, Nordheden, & Myrsten (1971) have shown that stress-like reactions (adrenaline secretion) occur when individuals are confronted with too little as well as too many situation demands. In one experiment reported in Seligman (1975) pidgeons who were given food regardless of their actions, and who were also constrained in their response alternatives, learned passive behavior.[**] Thus the rapid behavior change that is the focus of the "learned helplessness" experiments may be expedited by the high level of stress, but smaller difference in demand (represently both positive and negative changes in environment "stress") might also lead to behavior changes.[***]

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[*] The finding also hints that the strain and activity level mechanism are independent since "active" adjustment may also be associated with situations of "strain".

[**] This case is unfortunately referred to as the "welfare-state pidgeon" case (and 'learned lazyness'). These suggestive labels led to political extrapolations undesirably profit from "welfare" system too benevalent for their own good. An equally consistent alternate political interpretation is that pidgeons are unemployed because of societal mismagement and "constrained behavior" is merely a manner for keeping pidgeons, who would otherwise thrive on the opportunity for self-directed action toward meaningful goals, quiet in this unfortunate state of affairs.

[***] Seligman (1975) observes that "unless a young person confronts anxiety, boredom, pain and trouble and masters them by actions he will de an impoverished sense of his own competence."

Changes in Activity Level and "Personality"
(The Job Socialization Mechanism)

Anxiety Level or Life History of Stressful Events

The individual's total level of "unresolved strain" (or anxiety level) appears to have an effect on his ability to master new situations (M. Lader, in Levi, 1971). Miller and Swanson (1960) hypothesize that individuals with stressful life history avoid perception* of current problems, diminishing the level of active engagement in the environment. However, quite a different type of personality characteristic is cited as conducive to "passive" behavior change in the learned helplessness literature: Rotter's "external" type who attributes control to factors outside his influence—fate (Hiroto, 1974).

Impact on Future "Personality"

One important finding of the learned helplessness literature is that prior learning of an active response can inhibit the induction of passive behavior that would otherwise occur when the uncontrollable stressors confront the subject. Once "learned," the passive response pattern is very hard to eradicate: only total retraining by an outside agent restores activity (Seligman, 1975). We might hypothesize that the cumulative result of situations in which the activity level changes is a change in the individual's basic personality. A reduced overall "feeling of mastery" may lead to fewer problems confronted and fewer solution patterns available.

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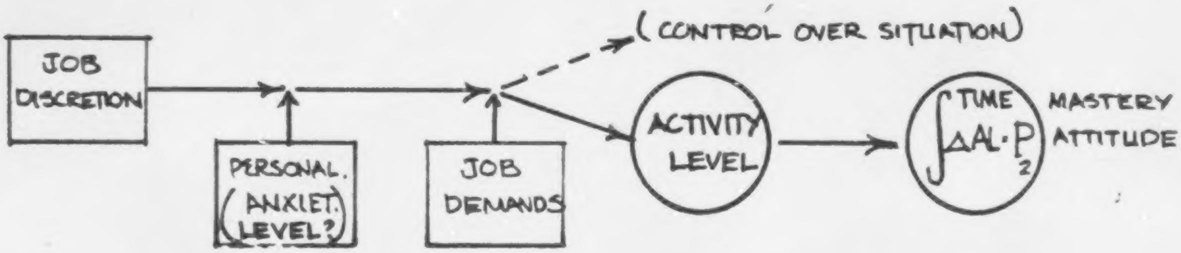
*"Avoidance" may not be the best description. Kahn, Wolfe, et al. (1964, p. 251) show that sensitivity to role conflict on the job is higher for workers with a high level of "neurotic anxiety" (a factor with which unhappy childhood is correlated .35).

The processes which might accompany such an "ineffective" style of coping behavior are discussed by Kohn (1972),*** Dohrenwend (1961).* Miller and Swanson (1960),** and Seligman (1975).****

Diagram 2-2



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*Dohrenwend (1961) hypothesized that environmental stressors, through the mediating effect of environmental freedom, produce a combination of inner and outer mastery called "constraint" by Dohrenwend. (This is just the personality characteristic that we hypothesized above as the mediator between job demands and personal strain effects.)

**Miller and Swanson discuss active-passive behavior. One very significant observation is that "men rewarded for passive reactions and punished for attempts to take the initiative and express anger directly show a much greater propensity toward loss of control because they have fewer realistic methods for resolving conflicts over guilt (from active behavior)." Men reared in a "masculine" pattern, by contrast, were able to master greater self-control under stress because they presumably suffer relatively fewer such activity-passivity conflicts.

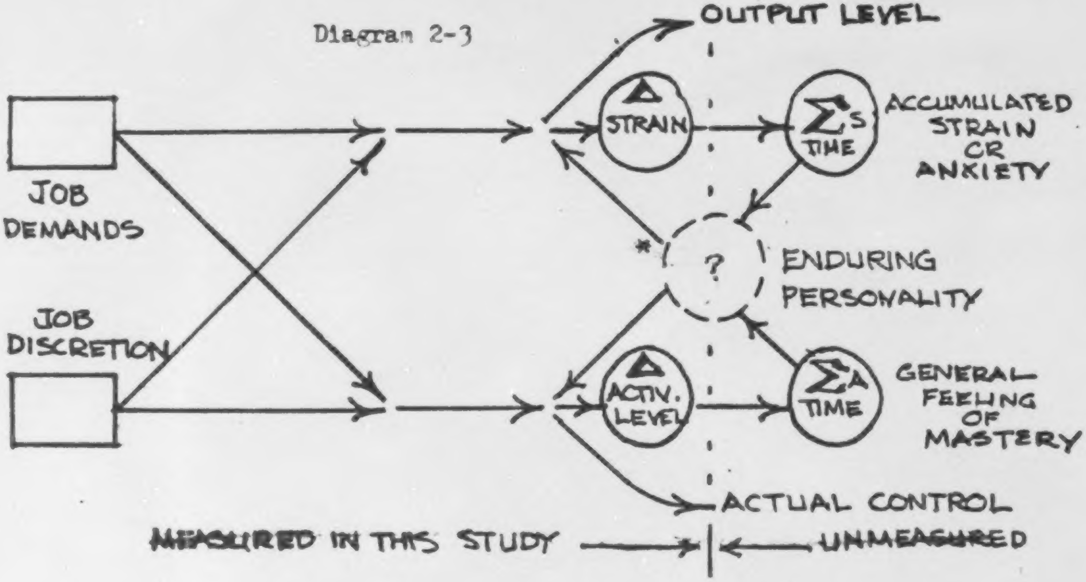
***There are indications of significant aspects of personality associated with stress management, that cannot be explained by simple ratings of cumulative stress alone. Michaels and Langer observed that low SES respondents had a significantly greater mental health risk even when the number of life stresses was held constant. The additional factor may be the "coping effectiveness level" of the individual. Kohn (1969) suggests that the cause of class differences in coping style are probably rooted in occupationally functional value systems in the lower class that, for survival, emphasize rigidity and passive obedience instead of flexible, active coping.

****For a broad discussion of situational determinants of passive behavior see Seligman, Helplessness: Depression, Development and Death (1975).

2A-2d. Combining the Two Models

The equations for unresolved strain and activity level, up to this point separately discussed, might have the interrelationship depicted below. The personality components which mediate each process of psychological functioning are themselves outcomes of the mechanisms of the model*.

Diagram 2-3


OUTPUT LEVEL
Δ STRAIN
Σ_S TIME
ACCUMULATED STRAIN OR ANXIETY
JOB DEMANDS
*
?
ENDURING PERSONALITY
JOB DISCRETION
Δ ACTIV. LEVEL
Σ_A TIME
GENERAL FEELING OF MASTERY
ACTUAL CONTROL
MEASURED IN THIS STUDY
UNMEASURED

Although the model above appears complex, it reduces to a simple diagram, below. If the "strain mechanism" represents the difference of job demands and job discretion, the "coping intensity or activity level mechanism" represents their sum, then both relationships become the diagonal axes of a two dimensional array of job content types. To test for work environment impacts then we merely associate each cell in the array with a frequency level for the dependent variable—in effect a three dimensional crosstabulation. Then the effects of "personality" will be assessed by examining this crosstabulation for each different type of childhood experience, family background, and education.*

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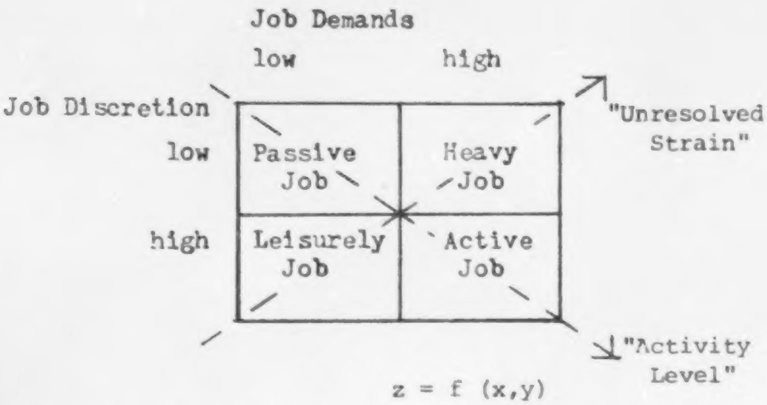
*We are not able to hypothesize reliably (nor test) which of the two personality characteristics should be associated with the "unresolved strain" and which with the "activity level" equations. However, if we take Rotter's piece of evidence (below) that "mastery and denial" are correlated to each other and weakly correlated to anxiety level, we can imagine a combined model. If "perception of mastery" is the personality characteristic which determines how much strain will result from a given level of environmental demands; and "anxiety level" is the personality characteristic which determines whether environmental freedom will result in expanded personal mastery, we then have the above combined model of psychological functioning. Rotter (1966, p. 13) observes that his I-E scale (internal mastery) is correlated to the Crowne-Marlow scale ($r = -.16$ to $-.41$) which can be used to measure denial (Caplan, 1975), but the correlation to the manifest anxiety scale which appears to be important in the learning ability or activity level change equation is decidedly less ($r = .00$ and $.24$).

Diagram 2-4



z = f (x,y)

Lesiure Activity, Mental Strain = f (Job Demands, Job Discretion)

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*For our empirical analysis we must settle for one "personality" measure: Stressful life events during childhood (or family background, education). In spite of the distinctions we proposed above there is other evidence that the perception of mastery and the level of residual stress are associated. Miller and Swanson (1960) give the clue that the personality characteristic of Denial (also mastery?) may be associated with accumulated stresses during childhood. Discussing denial, or avoidance of reality, they state: "The person is left with no recourse but a final escape into fantasy...or after years of pain, anxiety, or hunger, he is likely to employ denial where others resolve conflict in more mature ways." The authors also predict that child rearing devices in the working class such as the use of harsh punishment would reinforce denial of problematic realities.

Such a simplified diagram raises the problem of imprecision at several points. The true mechanisms of "socio-psychological functioning" may depart from these convenient diagonals. The "coping level" mechanism may be based on the absolute value of job demands, or the relationship may be multiplicative. In the first case we would expect differences in activity level to vary with job discretion only in the case of high job demands. The second case might imply a convoluted "saddle surface" of activity level changes. The 9-cell tables (p. 179) allow control for the effects of changing job demands at several levels of job discretion, and vice versa. Simple interaction effects should be distinguishable from purely additive relationships.

The "unresolved strain" and "activity level" dimensions in the diagram are thus mathematically independent and complementary transformations of job demands and job discretion. The implication of this independence of the "activity level" measure is that no "unresolved strain" is presumed to occur ($D_1 = D_2 \rightarrow D_1 - D_2 = 0$) with the changing levels of job demands. That is, it is when the demands of work can be accomplished by the discretionary options available to the worker*, increasing the total level of activity can represent an independent and normatively "beneficial" impact of the social role of work (up to a limit). The complementary implication for "unresolved strain" is that no change in activity level necessarily comes merely because of high "strain," or abnormally low strain.

Other literature is not in complete agreement with "independence: both Seligman (1975) and Guttentag (1975) argue that depression (a symptom of mental strain in our model) and the loss of ability to act on one's own initiative are linked: passivity leads to depression. Our hypothesis, however, is that the incidence of passive behavior may be independent of mental strain because passive behavior is most "adaptively"* induced in situations of low demands for action. In support of our position we noted that the leisure activity indicators and the mental strain symptoms are almost totally uncorrelated (see Chapter 4). However, we do not perform further analysis in this dissertation of possible functional linkages between leisure and mental health. For example: leisure activity might represent an indirect coping process for strains from the work day. Such an analysis would be a natural next step of research.

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*This position is similar to a concept developed by M. Csikszentmahaly (1975 Journal of Human. Psych.), in which optimal functioning (and the pleasurable state of "flow") occur when the skill possessed by the individual just matches the demands of the situation. Hall and Lindzey (1957, p. 225) note, "Someone may undertake a task, knowing full well that he will have to endure increasing tension, but at the same time he anticipates that the end result will be more perfect balance of forces."

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*The specific long term "adaptive" implication of even the highly stressful "inescapable shock" is a fatalistic perspective(which devaluates the significance of and thus the "pressing" quality of future demanding situations).It is i.e. a 'passive adjustment' to a low activity environment. The learned helplessness situations certainly qualify as "straining" (high stress-low discretion) and yet the primary finding of the 'learned helplessness' literature is that permanent changes in activity level occur instead of only transitory states("mental strain "-?).

2A-2e. Issues of Time that Affect the Model of "Socio-Psychological" Functioning

The data available in the Swedish Standard of Living Study presents a static picture of work and leisure behavior in 1968. The lack of time series data (although 1974 longitudinal data is now available) presents several types of problems for the model of "socio-psychological functioning." In the first instance the very distinction between "compensation" activity and "carry-over" activity may reflect a difference in the time frame of reference in which the 'response to working conditions is presumed to take place. The second problem refers to the life cycle time period in which "socialization" or personality formation occurs. If this process is complete before the individual begins his work career, then the work-leisure associations may represent the artifact of preexisting personality orientations. Thirdly: there are social processes at the level of the community which might favor choice of some leisure activities as cultural traditions. The strength of such "anthropological" explanations would rest on the length of time it takes for the community to develop a new set of traditions (to accommodate occupational system changes).

Equilibrium and Compensation vs. Adaptation and Carry-over

Opposing mechanisms of "psychological functioning" underlie the compensation and carry-over models. The compensation theory implies an equilibrium model: the organism has a fixed capacity for tensions: those not released at work must be released during leisure.* The time dynamic may be short: a day's span. A constant reservoir of "behavioral potential" distributes activity around the clock—what does not occur at work will occur in the evening.

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*Donald McKinley (1964) argues that men at lower socioeconomic levels (cont'd.)

A longer time dynamic and the exact opposite behavior are implied by the carry-over theory, which represents a process of "job socialization." A worker deprived of a certain type of activity during the day will engage in less of it, not more of it, during the evening. An implicit assumption for operation of the carry-over hypothesis is that the job retains its deprived character over a long period of time. One would not expect the worker to acquiesce to a grey future of passive withdrawal after just one day chained to the punch press. The first day at the press, in fact, the worker might revolt; it is only after years of restriction that he "adapts" to the low level of personal discretion at work by a general reduction in displayed decision making.

The important question becomes how long must "non-equilibrium" work environment conditions be endured before a change occurs in the level of equilibrium itself. The "physiological deficit" explanation of the "learned helplessness" findings (see p. 56) argued that short term chemical changes (not necessarily compensating, however) were mistaken for long term adaptations. Without longitudinal data it is hard to observe short-term compensations that might in fact be occurring. Thus cross-sectional data, reflecting relatively permanent circumstances of the individual, may be biased toward the detection of "carry-over" effects. It should also be

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"compensate:" they are oppressed by job frustrations which manifest themselves in direct expression of hostility on the job and with efforts to compensate by rwards from non-occupational activities (see Chapter 4).

noted that "compensation" and "carry-over" need not be exclusive. Both short-term compensations (work in the day, sleep at night) and long term adjustments to environmental conditions may occur simultaneously (Faunce and Dubin, 1975).

Childhood Socialization vs. Job Socialization

The most common hypothesis about the relationship between an individual, his job and his leisure is probably that the individual chooses a job which matches his (fully formed) personality, and simultaneously adopts a leisure life style consistent with these. Here, the question is whether early experience (or even more antecedent, biological heredity) is so significant that immutable patterns are established during childhood, or whether the effects of the environment are cumulative and include adult experience as well. Most developmental psychologists, even when dealing with adult maturation process, take the former perspective. No clear conclusions can be drawn about the relative magnitudes of childhood vs. adult socialization effects, because no broad longitudinal studies seem to have been undertaken (Neugartin, 1963; Brim and Wheeler, 1966).* However, Langner and Michaels (1963) in a study of environmental correlates to mental health problems and behavior styles, find that the significance of particular "life problems" during childhood generally has no greater impact than such situations during adulthood. Overall mental health risk is a linear and cumulative function of stressful life events regardless of when experienced (for exceptions see footnote p. 66).

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*There are several studies of changes in behavior for specific occupational groups, such as policemen and soldiers (Hadar, 1975; Stouffer, 1947).

A thoroughly developed (but not tested) conceptual model of the process of adult socialization on the job is presented by Schein (1971). He proposes that socialization of the individual by the job is stronger toward the beginning of the career.* "Innovation," where the individual modifies his work environment to conform to his own orientations,** is stronger toward the end of the career. For the most part, Schein suggests, job socialization does not change the fundamental aspects of the individual (non-"labile" characteristics) unless the individual is constrained to stay on the job under coercive persuasion (such as economic responsibility or adversity?).

Blau et al. (1956), in "Occupational Choice, a Conceptual Framework," underscore the fact that "occupational choice is a developmental process that extends over many years, and the social environment may limit the individual's freedom of choice at two different times. On the one hand it influences the personality development of the choosers [Kohn, 1969]; on the other it defines the social economic conditions in which job selection takes place." Blau's discussion highlights one difficulty of assessing the relative magnitudes of adult vs. childhood socialization: "anticipatory socialization." An educational curriculum, for example, may be chosen with the clear understanding that the process will be "socialization" for a future occupation. This raises the question of whether occupational socialization should include occupationally relevant educational experience. In the analysis in Chapters 4 and 5 a "conservative" choice is made: education is presumed to be a component of individual background, instead of an embryonic element of occupational experience. The beginning of the occupational career occurs when the respondent records his first year of experience on the labor market.*

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*One study (Hall, 1967) found that the "first year in the organization" was the crucial period for deciding how well a management trainee would fit into the organization over the long run.

**There is a range of literature discussing this "opposing perspective" that individuals select their jobs as one stage in the gradual unfolding of their (pre-ordained) personality. For a discussion of possible experimental designs of this type see Raynor in Atkinson and Raynor (1974).

Very Long Term Effects—The Anthropological Perspective

Our hypothesis above implies that the relationship between work and leisure can somehow be predicted by immediate dynamics of the "stress management." One of the most common alternative explanations is the "anthropological perspective." It would suggest that leisure activities represent traditions of culture that have developed among particular population groups over generations.** An anthropological theory would suggest that present dynamic hypothesis could easily fail to explain observed behavior. The leisure behavior, while it may have been a meaningful and optimal solution to anxious or stressful feelings at one point, may survive now only through the strength of imitation, socialization, and the learning process, which are imposed through the community and extended family. Changes in the dynamic pressures faced by individuals will only have effect over long periods of time,* as his habits change and as other members of the society validate a new activity.

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*Not unambiguous, unfortunately. We do not know whether the individual is referring to a full time or part time work (or a weighted average).

**Lockwood, David, "Sources of Variation in Working Class Images of Society," Sociological Review, 1966, 14, 3, p. 250. Lockwood specifically identifies ship-building as an industry where "highly developed forms of proletarian traditionalism" might be found, the industry concentrated workers in isolated and one-class communities with low rates of geographical and social mobility. Example—Tyneside, England. For an excellent description of this local cultural link between work and leisure, see Brown, R., Brannen, Cousins, Samphier, ; "Leisure in Work. The 'Occupational Culture' of Shipbuilding Workers," 1974.

The long period of cultural adaptation of the anthropological perspective introduces a new set of parameters to the process. The enduring cultural patterns must model or adapt to some special features of the natural or social environment. Thus, particular local customs, and their environmental determinants in a particular town, are obviously important considerations for this research. Since our survey data with a random sample does not allow this kind of hypothesis to be tested, we must be prepared to concede that a significant portion of the variance will be unexplained in our model due to the omission of "ecological"/"anthropological" data.

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*The question of how long it takes before a pattern changes is the central element of the culture of poverty debate. One group of scholars (including Oscar Lewis, 1965) has maintained that such habits are learned by the child of a particular class through the process of his socialization and remain intact, resistant to new life circumstances, through his life. As an adult the individual will pass on the culture of poverty to his children. Another group of scholars (including Lee Rainwater, 1971, and Melvin Kohn) suggests that it is the daily problems faced by members of the lower class that form their behavior, and if these life situations were changed to a significant degree, the patterns of lower class behavior would change in a short period of time.

2A-3 Measuring Job Content in the Literature

Up to this point we have dealt with job content concepts at a very theoretical level so that we could make use of literatures about "socialization of roles" and survey a broad range of social psychological findings to construct a model valid for adult working life. Our next step is to operationalize the concepts of job demands and job discretion to provide a background for development of job content dimensions from the Swedish data in Chapter 2B.

a. Job Demand Measures Found in the Literature

While the concept of job demands can be clearly related to broad theoretical concepts in social role theory (role "obligations", Linton, 1936, or "role-expectations," Parsons, 1951), these do not provide a sufficiently detailed analysis. At a more empirical level Gross attempts (in Levine and Scotch, 1970) to summarize studies of job demands into three broad categories: 1) task stress, 2) organizational structural stress, and 3) stress of occupational careers (including job loss). This initial trichotomy must be substantially expanded to include areas discussed in other job demand research:

1) Physical demands of work are surveyed in the Swedish data (along with "psychological" job demands). It is surprising that most U.S. studies of job content do not include a more thorough review of physical job demands. Three sub-dimensions of physical demands might be identified dealing with: physical exertion, physical discomfort, and physical hazards.

2) Task stress is separated into a component relating to proficiency in the application of skills (Buck, 1972) and another component dealing with

time pressures on the job (Caplan et al., 1972). Time pressure stress has been studied in connection with piece rate work systems (Johansson and Lindstrom, 1976) (Blau, 1964).

3) Organization structural stress is generally conceptualized as the interpersonal process-level contribution to job demands. This entire category is generally omitted in our analysis since we do not have information that allows us to discriminate whether the task "itself" or the social situation is perceived as the source of stress. Buck (1972) observes that the task is most often listed as the source of pressure even when alternative sources such as coworkers or supervisors are questionnaire alternatives.*

Quite apart from whether the task or the supervision is perceived as the source of general job demands, there are a number of specific social structural situations that serve in themselves as tension generators. There is a substantial literature on such social structural considerations which includes: inconsistent definitions of the job (role ambiguity, Kahn, Wolfe, et al., 1964); group norms of output and performance (Homans, 1951; Blau, 1964); and the work group as resources for managing tensions (Seashore, 1954; Buck, 1972; but--Klein, 1971; Pinneau, 1975).

4) Stress of the occupational career can come from sources related to either immediate job security or to concern about the career opportunities.

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*Sources of Job Pressure(Buck,1972)

	Managers	Workers
A. Job demands	.37	.31
B. Supervisor demands	.28	.27
C. Company policy demands	.26	.20
D. Own employees demands	.24	—
E. Family demands	.21	.17
F. Fellow employee demands	.16	.15

Even the family can be perceived as a source of job pressure. In a subsequent analysis, however, Buck shows that, at least for workers, the family serves as a resource for managing job-related pressures (p. 7).

Cobb (1975) discussed physiological evidence of stress in connection with job abolition. Quinn (1972) assesses stress associated with "dead end" jobs or careers.

Problems of Existing Literature

In most of the comprehensive studies of job demands noted above a list of specific stressors is aggregated into one overall measure: "Job Related Tension" (Quinn et al., 1972), "Job Pressure" (Buck, 1972), "Quantitative Work Load" (Caplan et al., 1975).* Unfortunately, few studies take the next methodological comparison of the relative importance of different sources of job stress in terms of their impacts on the "outcome" measures such as mental strain or activity levels (Buck, 1972, is a partial exception).

Perhaps the most comprehensive study of sources of job stress is Buck (1972). The study certainly cannot be faulted on lack of detailed stressors: over sixty possible stressors are surveyed. However, another methodological problem is introduced, which from the standpoint of our model, complicates interpretation of the findings. The "job pressure" measure used by Buck includes measures of unresolved strain which are the dependent variable —in our model: "jumpy, nervous, tense." Thus, this Job Demand measure is "contaminated" with the effects of job discretion (p.

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*Caplan (et al., 1975) have undertaken a comprehensive U.S. study of job demands and worker health. Their index of job demands (quantitative work load) includes few detailed questions about sources of stress. Only general questions about "working hard" or "working fast" are included, and not even physical vs. psychological job demands are differentiated. There is, however, a separate measure of "role conflict" (Kahn, Wolfe, et al., 1964).

124).* However, if we assume away this problem (by postulating that job demands are uncorrelated to job discretion),** we can use Buck's job pressure findings to identify a job demand contribution to stress and strain at work. Buck reports the following components of job pressure: For managers there is a "problem solving and an error-avoidance component, and a component dealing with subordinate relationships." For workers there was a "supervisory and a task proficiency component." More specifically: "(For all workers): Avoiding errors and penalties, earn respect of supervisor, present only the 'good side', call for help in difficult situations. (For workers): Know all phases of work, increase technical competence, have necessary tools and parts, have only a few matters to concentrate on. (For managers): Give promotions on a merit basis, and delegate tasks and responsibilities."

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* Quinn et al. (1971) also discusses specific job conditions that are correlates of "job related tension." Some of these conditions are job demands and others job discretions in our framework, and since the dependent variable is similar to our "unresolved strain" it is not completely correct to use the findings to isolate the job demands which might be the sources of job stress.

**It must be remembered that in our study high job demands are positively correlated with high job discretion (although it is the negatively correlated demand and discretion levels that lead to differences in mental strain).

2A-3b Job Discretion Measures Found in the Literature

We can differentiate our concept of job discretion from the broader concepts of job "rights" (from role theory's "rights and obligations"—Linton, 1936) or job "resources." Our definition does not include the rewards of the work in economic terms, which might be considered one of its rights or entitlements. Another meaning excluded by our definition of job discretion is the "resources" the individual may bring to bear in solving his problems (status, contacts) from outside the job. The end result of more resources may be more discretion in choosing between available courses of action on the job, but job discretion may be increased merely by allowing the worker more control over daily processes—without increasing resources that can be transferred to other situations (and are not a property of the job but of the worker). Job discretion is then the worker's potential control over the explicit tasks of his job and his overall conduct during the working day.

The area remaining is still broad, and three sub-conceptions of job discretion can be distinguished in the literature: discretion over use of skills;*

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*Adam Smith in The Wealth of Nations (p. 8) notes that increased dexterity by the workman should be the result of "reducing every man's business to some one simple operation." Smith at least realized that this would not make the worker either intelligent or happy (pp. 101, 127).

Taylor's "scientific management" school explicitly proposed that intellectual decisions need not and should not be made by all workers. Most intellectual discretion in Frederick Taylor's work process was concentrated in the hands and minds of the industrial engineer at the time of plant and work process layout, or with the manager during its operation. Considerable intellectual agility by these people was needed to divide work tasks into minute units within which no unspecified variations occurred or problem solving agility was needed.

For an example of the unholy alliance between the industrial engineer and management to "defraud" the worker of these satisfactions see Work Simplification Handbook for Analysts; Headquarters, U.S. Department of the Army; Nov. 1973; pp. 1-1, 10-1.

discretion with respect to use of time,* and closeness of supervision.**

We can distinguish these three types of job discretion (skill, schedule, supervision) in the literature; however, they rarely appear in pure form. Discretion over both skill and time are included in Gardell's*** discretion measure. Skill required and personal resources are included in Gardell's skill level. Hackman and Lawler's**** Autonomy measures the

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*The worker's opportunity for free scheduling of time resources at the workplace has been a focal variable in "job content" since the beginning of the industrial revolution. The agrarian work force of early 19th century England had to be stripped of its proclivity to mix work activity with socializing, errands, and general rituals. "The main difficulty (of the factory system was) in training human beings to renounce their desultory habits of work, and to identify themselves with the unvarying regularity of the complex automaton.... The more self-willed (the workingman) the less fit a component of a mechanical system, in which by occasional irregularities, he may do great damage to the whole." Ure, Dr. Andrew, Philosophy of Manufactures, 1835.

**Marglin, S., "What Do Bosses Do," 1971, discusses the manner in which differences in authority are related to use of skills. Marglin's position is that skill differences have often been used as a "cover" for maintaining differences in authority relationships, (See also K. Stone, mimeo, "The Origins of the Job Structure in the Steel Industry," 1973) which allow control over the means to economic accumulation. In our view the satisfactions inherent in personally organizing the inputs to production, the social relationships with one's coworkers, and integrating these into form and content of the work output (see Marx on "alienated labor" 1844) may be as important as monetary rewards in post-industrial societies.

***Gardell conceptualizes the measure first as a dual concept: "The degree of discretion given to the individual to determine work layout, working methods, pace and social interaction; to perform tasks in various ways, improve his performance and further develop any aptitudes he may have. The level of skill that the task requires of the individual: his know how, initiative, independence and ability to initiate contacts--in short all of the creative talents needed to do a satisfactory job."

****Roughly the same issues are covered by conceptual dichotomy (developed by Turner and Lawrence) and utilized by Hackman and Lawler: Variety, the degree to which a job requires both a wide range of operations and use of a wide range of procedures; autonomy, the degree to which employees have a major say in schedules at work and in decisions about procedures of work. (A third element, task identity, measures the degree to which the worker executes a whole piece of work and can identify the relative amounts of worker (as opposed to supervisor?) authority over use of skills and time. Their variety measure reflects more closely the range of decision-making permitted, but it is limited to "skill" application. Kohn and Schooler* clearly distinguish a skill dimension, substantive complexity, but low level of required skill is combined with restricted time freedom into routinization of work. Their closeness of supervision dimension may affect use of time specifically, as well as relative authority of the worker.

The most common definition of job discretion appears to relate to the breadth of skills the worker may utilize on the job: Intellectual Job Discretion. Related measures of the individual's intellectual "control" on the job have been developed by Gardell (1971), Kohn (1973), Turner and Lawrence (1965), Hackman and Lawler (1971), and Caplan et al. (1975).

Job discretion is also discussed on the basis of other issues which may be combined with skill, schedule or supervisorial discretion: general vs. specific skills,** the "fit" between the individual skills and job requirements. One such alternative basis for categories is the range of

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results of their labor. This is not the same as "job discretion" but may be a result of it. The fourth and fifth dimensions, dealing with others and friendship opportunities, are job social relations measures in our model. Hackman and Lawler, 1971, p. 265.)

*Kohn and Schooler (1973) identify three aspects of "Occupational Self Direction": the substantive complexity of the work, routinization (repetitiveness) of the work, and closeness of supervision.

**a) A distinction must be made between the range of skills required, and the level of skill required in a specialty area. In general it does not seem to be true that most measures of "skill" isolate the latter to the exclusion of the former. There is an attempt to measure both in the U.S. Dictionary of Occupational Titles. (cont'd.)

freedom permitted on the job vs. the level of skill required, although this distinction may be less valuable for modern labor forces.*

Problems of the Existing Literature

While these distinctions between use of skill and use of time and closeness of supervision are noted at the detailed level, they are generally not utilized in the empirical analyses.** The most common empirical approach begins with the finding that all the above types of job discretion are so highly correlated that an aggregated measure*** is used to measure them all. This prevents distinguishing the effects of subcomponents. Gardell uses a combined "discretion-skill" level (1971). Turner and Lawrence combined their dimensions into the "Requisite Task Attribute" index, which was revised into a "Motivating Potential Score" by Hackman and Lawler.

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b) Caplan et al. (1975) concentrate on the distinction between the objective job circumstances (self-reported) and the individual's desired job situation. Their alternative set of independent variables is thus the "fit" between person and environment.

*In our opinion it is now a relatively rare occurrence when a worker in the educated labor forces of Sweden and the United States is not able to master all the skills, avail himself of all the schedule freedom, or take all the responsibility for self-supervision that the job permits. However, this is not the case in less developed countries. It was also not true in the U.S. in World War Two when there was an underqualification problem ("Job Analysis in the United States Training and Employment Service," 1970, Department of Labor).

**There are several examples of more specific analysis, however. Kohn and Schooler (1973) concentrate on "substantive job complexity," as a measure related to skill in dealing with People and Data (negatively related to dealing with Things!). Young and Willmott (1973) in a study of work and leisure use "influence over use of time at work" as a measure of autonomy at the job.

***Caplan et al. (1975) develop a measure of "job complexity" which includes judgement of detail supervision, variety of procedures, involvement with people and groups, simultaneity of task demands, and evenness of work load. This unfortunately mixes job discretion with our other categories of job demands and job social relationships.

Section 2B: The Empirically Derived Job Content Dimensions

Our attempt to construct "job content indicators"is necessarily limited to measures available in the Swedish data base. The first step is to search the 30-odd available yes-no responses ("Is your job...") for clusters of variables that approximate the major* dimensions of the job content model. The second step uses correlations, some factor analysis, tests of "scale" reliabilities, and considerations of interpretive clarity to split the original job demand and job discretion clusters into six groups. These final clusters of variables, which have both substantial intercorrelation and interpretive consistency, are statistically validated by Guttman scale and Cronback alpha statistics and added to form scales. The job content indicators thus constructed are summarized below and discussed in greater detail in the subsequent sections:

I. Job Demands

A. Psychological Job Demands

Is your job hectic; psychologically demanding; psychologically exhausting?

B. Physical Job Demands (Exertions and Discomforts)

Does your job require 130 lb. lifts, other physical exertions, outdoor and temperature extremes, dampness, and dirty work?

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*Unfortunately the data available on a national survey does pose severe limitations; we shall have to do without a measure of social relationships on the job. An additional indicator of "institutional rights" at the work place is available, although this differs somewhat from the other dimensions which measure the actual experience in the daily life of the worker.

C. Physical Job Hazards [excluded from final work-leisure analysis]

Does your job expose you to dirty chemicals substances; to dust, gas or smoke; to dangerous substances, to heavy vibration, or to noise?

II. Job Discretion

A. Intellectual Job Discretion

Is your job monotonous/repetitious? What is the typical worker's educational level in your type of job?

B. Personal Schedule Freedom

Can you make a phone call; receive a visitor for 10 minutes; leave for a ½-hour errand without consultation? Is the time schedule important on your job?

C. Institutional Job Status Protection* [excluded from final work-leisure analysis]

Do you have a fixed hourly wage, right to one month's dismissal notice, a fixed salary, supervisorial authority? Do you own the business?

In the sections below we first review the general procedures followed to construct the job content indicators (section 2B1). We then examine each indicator in detail, review its construct validity, critique its limitations, and suggest future changes (section 2B2).

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*For a more comprehensive discussion of job security guarantees see Doeringer, P., and Piore, M., Internal Labor Markets and Manpower Analysis, and Freedman, Marcia, "A Sheltering Theory of Market Structures," mimeo, Dewey Library, M.I.T.

2B-1 The Job Content Dimensions and Their Derivation

The Boundaries of the "Job Content" Variables

Our focus in this study is on the non-economic effects of the job on life outside of work. Thus the economic variables, dealing with scarce resources of time, money and other marketable commodities are excluded. They enter our investigation only as "control" variables for the hypothesized causal linkages through mechanism of psychological functioning. Almost all studies of job content, job satisfaction and mental health make this distinction between the economic or "alienable" aspects of work, and its "intrinsic" or non-alienable components.*

Time, another "zero sum" commodity, is also separated from job content, but only as it relates to overall time schedule: working hours per week, vacations, night work, etc. Time dimensions of work which measure time pressure, schedule freedom, and variety within the working day are included in the job content dimensions. While "time budget" problems could have a significant impact on leisure behavior, shift work and holiday work occur with too low an incidence in the general population to be studied in detail by our sample data or to substantially affect the

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*In Quinn and Cobb's(1972) quality of employment factor analysis of job facet importance ratings "pay and fringe benefits" (plus promotion and job security at lower loading) constituted a distinct factor separate from intrinsic aspects of job content. See also Caplan et al., 1975, op. cit., p. 3; Herzberg, et al, 1959; Zdromyslov, et al, 1970.

Table 2-1: Frequency of Job Content Characteristics

Sweden Full Work Force [n = 3759, unweighted/(e) = employed only n = 3214]

I. Job Demands	Yes to main question Full Population)
A. Is your job psychologically demanding?	30.2%
B. Are you psychologically exhausted after coming home from work?	12.2%
C. Is your job hectic?	62.9%
-	
D. Are you physically exhausted after coming home from work?	21.3%
E. Does your job require lifting 130 lbs.?	34.7%
F. Is your job physically demanding in other ways?	43.9%
G. Do you work outdoors? (or are you exposed to indoor temp. extremes? To what degree?)	33.3%
H. Does your job expose you to dampness (wet clothing)?	29.0%
I. Do you get dirty (soiling or heavy chemicals)?	48.7%
-	
J. Are you exposed to dust, gas, or smoke?	35.4%
K. Are you exposed to dangerous chemicals?	17.9%
L. Is your job noisy? (To what degree?)	36.1%
M. Are you exposed to strong vibrations?	9.7%
-	
(N. How many minutes of rest break do you have?)	NA
O. How many days of vacation do you have?	NA
P. Is your job insecure?(To what degree?***) (e)	10.8%
II. Job Discretion	
A. Is your job monotonous/repetitious?	18.9%
B. Does the typical worker with you job have more than minimum education? (What level?)**(e)	38.8%
-	
C. Can you place a telephone call (1/day) during work? (e)	81.2%
D. Can you receive a visitor for 10 minutes? (e)	70.7%
E. Can you run an errand for 1/2 hour without consulting your supervisor? (e)	32.0%
F. Do you use a punch clock/stamp? (e)	27.3%
G. Are they sticklers for punctuality on your job? (e)	73.7%
(H. How many minutes of rest break do you have?) (e)	NA
-	
I. Do you have any work supervisory functions? (How many workers?) (e)	21.7%
J. What type of contract do you have: piece rate-tips; hourly wage; fixed salary; work-group contract?***	NA
K. Do you belong to a union? Which: *	67.1%
L. Do you have the right to one month's notice? (e)	55.6%

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*Rough translation: L.O. (like U.S. A.F.L./C.I.O., mainly industrial workers; T.C.O. primarily white collar workers plus S.R. (foremen); and S.A.C.O., university educated employees (plus some student "core").

**See Table 4-4

***See Appendix Table A2-5

aggregated outcomes. In general the average correlations of all the leisure activity indicators with measures of total time schedule* problems are low ($\bar{r}$ = -.02; +.04/for extra hours; for weekend-night work, respectively). The 26 remaining job content variables were first separated into two theoretical categories proposed above, job demands and job discretion-Table 2-1.

Step Two: Sub-Clusters of Job Content Variables

This stage poses methodological difficulties for our job content analysis. The most straightforward techniques for isolating dimensions from a group of variables—factor analysis—did not provide clear results at the detailed level.** Rather than use these factors as dimensions for our analysis as in the case of the leisure activity and mental strain dependent variables, we relied on them only as a guide for selecting variables for later, more statistically rigorous Guttman scale and Cronback alpha analyses (see individual indicator descriptions). This approach allows the researcher more control over the "interpretive homogeneity" of the final indicators (The factors were occasionally quite hard to label). However, it has the weakness of not allowing the researcher to claim that the final indicators are "the minimum number of underlying

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* Other Swedish studies of work and leisure are focusing on this relationship between work hours and leisure. Gardell, Bertil; Nilsson, Carina, "Sociala Effecter av Arbetstedens Omfattning och Förläganing," 28/3/1974, Arbetarskyddsfonden, Stockholm (p. 6). An industry breakdown of schedule problems shows industry localization of problems for the Swedish "blue collar" labor union, L.O.—1,700,000 (total Swedish employment—3,800,000—1973):

A. Shift Work (136,000 total) = 8.0%	1. Metal industry:	2.9%
	2. Paper industry:	1.2%
	3. General manufacturing:	1.6%
B. Special Time Tables (203,000 total) =11.9%	1. Local government service:	8.2%
	2. Transportation:	2.9%
C. Uncomfortable Times (175,000 total) =10.3%	1. Sales work:	4.0%
	2. Local government service:	3.5%

**A modified factor analysis is now being undertaken using a new strategy: a search for patterns of deviations in the correlations that would indicate interaction effects between variables—potential Guttman scalar relations-- in combination with a conventional factor analysis.

Because of these ambiguities* it was decided that more precise scale techniques should be used to construct final job content indicators. For the job demand indicators, the groups of variables that loaded on each factor were used as starting points for further scale construction** The final indicators are discussed in greater detail in the following section.

b. The job discretion variable appeared to be even less likely candidates for successful factor analysis because of the very non-normal distributions of the variables ("ownership" on the one hand, "piece rate" on the other). Instead, three groups of variables with high internal correlation and interpretive similarity were identified, and from these groups, Guttman scale tests were performed to isolate indicators with statistical validity:

1) The six variables relating to schedule freedom—phone calls, visits, errands, punctuality, time stamp, rest breaks—were used to construct a Guttman scale (see next section for the final indicator). The time stamp variable could not be consistently included because its use is confined mainly to industrial jobs. The rest break measure also did not work in the scale.*** While a monotonous job was also related to lack of schedule freedom on the job, this relationship is much weaker than the "skill"

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*One crucial step in indicator construction was the placement of "hectic work." Although in the job demands factor analysis its loading had been almost as high on the physical stressors as on the psychological stress factors (.24 vs. .19/.21—young workers), when Guttman scale analyses were applies to both the psychological demand measures and the physical exertion measures, the scale-item correlation was higher on the psychological job demands scale.

**Several unsuccessful attempts were made to incorporate "rest breaks, vacations, and job insecurity" into the psychological job demands Guttman scale.

***It seems to correlate more consistently with low psychological job demands.

dimensions" that summarize the variation in the job content variables included.*

a. The job demand factor analyses were performed for both young and elderly workers (see Appendix Table A-6). Although the factor pattern did consistently provide proof of the distinctness of physical and psychological job demands, it failed to identify reliable factors at a more detailed level. For example, all of the physical work environment variables loaded on the same factor for older (but not younger) workers,** but in the following section we find evidence for sub-divisions of physical job demands—using Cronback alpha techniques. The psychological job demands form a clearly separate factor for older workers but not for young workers, where a separate job insecurity factor also emerges.*** The hectic work variable loads significantly on both psychological and physical job demand variables.

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*This is the claim which can be made with factor analysis. Of course this claim is only as good as the group of variables one begins with. The leisure time variables are all rather similar measurements. The job content variables differ substantially in level of specificity, and in type of meaning.

**For young workers a separate physical tiredness factor emerged. When physical tiredness was plotted with either psychological stress or physical job stressors, the cluster centers were 45° rather than 90° apart; thus this factor was considered to be less "independent" than the other two. The more subjective measurements of the physical tiredness indicator: "feel physically exhausted after work" and a "sweaty job" (presumed to vary with worker's physiological constitution) were removed. For older workers the physical job stressor and tiredness dimensions are combined.

***For young workers(only) rest breaks and vacations were at the opposite end of the psychological stress dimension from psychologically exhausting work. In further analysis it becomes apparent that the job discretion dimensions are highly correlated with social class, but that demanding work in general (hectic job) is not.

correlation.

2) Jobs requiring much education were correlated with those which are not monotonous/repetitious (see next section for final indicator). While supervisorial authority, and type of union affiliation were also highly correlated with these two variables, they were finally dropped because their addition would have diluted the meaning of the "intellectual job discretion" indicator.

3) Supervisorial authority is highly correlated to both job skill level and (less strongly) to job personal freedom, but a decision was made for reasons of interpretative homogeneity to include job authority with measures of contract form, ownership and job security protections. All these variables are incorporated into a dimension representing the worker's status protections in the social organization of the place of employment. Of all dimensions it is most strongly related to a standard Swedish indicator of occupational social class ($r = -.70$, working class; $r = .35$, class I). It also combines the most divergent range of information onto a single indicator (employment security as well as institutional authority) and is the least internally consistent scale. Kohn's general job content category "organizational locus" (which includes hierarchial position, ownership prerogatives, and bureaucratization, and job satisfaction study dimensions including job security, promotion opportunity, and supervisorial opportunity) is analogous to this dimension.

Statistical Reliability

One important indication that a group of variables all measure the same "underlying concept" is high mutual correlation among the variables. One of our statistical indicators, Cronback's alpha* statistic, relies basically on this clustering relationship (the covariance of the selected variables is maximised). Our other indicator is the Guttman scale**. It is related to the tendency of the selected variables to correlate* or cluster, but in addition contains information about the relative scale position of each component variable in the final additive scale (their relative degree of difficulty). Thus the Guttman scale conveys more detailed information from the original questions, while other additive constructed scales report only an aggregate score (true of our scales tested by the Cronback test). For the Guttman scales we can label each scale level with the question which discriminates it (under errorless conditions); the average accuracy of these nominal labels (coefficient of reproducibility) must be over 90% for a useful Guttman scale.

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*The Cronback's alpha statistic indicates how much of the co-variation in a group of questions, selected as a trial index, is included among that subgroup of variables and how much is external to the cluster. The strength of association indicated by the index (.0 to 1.0) is roughly equivalent to that of a correlation of the same magnitude. Cronback, L., "Coefficient Alpha and the Internal Structure of Tests," *Psychometrica*, 16. p. 297.

**The individual's response to the full set of questions can be predicted by knowing his response to any question of the group. In this manner four or five separate dimensions can be reduced to one, *without the loss of any detailed data* in the process of combining questions. For example, if four questions were used to construct the Guttman scale, an individual who responded "yes" to the question which represented the top of the scale would also respond "yes" to the easier questions—at least if the Guttman scale were free from errors. Most sets of questions randomly chosen cannot, of course, be assembled into a scale which has the above properties, and even when the Guttman scale is found to be statistically acceptable, there are still "errors" that distort the interpretation of the scale levels. The ability of a scale to predict from the total "yes" answers the exact complement of responses is called the "coefficient of reproducibility" and for a useful Guttman scale this coefficient should be at least .90 overall.

* It is more difficult to construct indicators where there is no constant measure of association between the variables. Other scale construction methods, based on non-linearity, such as the Guttman scale, are utilised after preliminary examination for variable clusters. This particular type of non-linear relationship may also be "transitive"—a property that gives the Guttman technique its special strength for summarising information from several variables.

Measurement Validity

A major cornerstone upon which this study rests is the growing body of work environment research which confirms the validity of worker's self-reports of the objective (expert-rated) work reality. The correspondence is not perfect, of course; in the literature the worker/expert ratings correlate about r =.75 on the average. Of course, just this discrepancy can be of in interest in its own right(as in Caplan, et al, 1975 - "fit" measures). Several studies have taken as their explicit goal an investigation of the relationship between worker self-reports and expert ratings of job content, particulartly in the area of job discretion. Kohn and Schooler (1975) report a multiple correlation of .78 between a self-report index of "substantive complexity" and expert rated measures of skill in dealing with "things, data, and people" from the U.S. Dictionary of Occupational Titles. Turner and Lawrence (1965) find "perceived" task questions and the expert rated task attributes were"very strongly associated with each other" (and equally related to job satisfaction). Bertil Gardell (1971) assessed the correlation between expert opinion of low job discretion and worker perceptions of "alienation"* and found a high overall level of association. Hackman and Lawler find that in five of six areas measured (variety, autonomy, task identity, dealing with others, and friendship opportunities) correlations between self-reports and expert ratings averaged .75:*

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*Gardell, Bertil, Production Technology and Job Satisfaction, Stockholm, 1971. The indicators:

1. Feeling of solidarity
2. Social contact possibility
3. Self-determined work
4. Interesting work
5. General satisfaction.
6. Psychological stress
7. Supervisor relations
8. Detailed supervision
9. Management
10. Personal politics
11. Earnings
12. Labor union

"All selection and adjustment mechanisms to the contrary, there remains the fact that many individuals are dissatisfied with their work—and their proportion grows the more their tasks are objectively rated as fragmented, repetitive, and constrained" (p. 390).

> "Table 2 shows that employees themselves provide judgements of the characteristics of their jobs which in general agree quite well with those made by outsiders and (with the exceptions noted above) by their supervisors. It is not, of course, possible to demonstrate conclusively that the employee judgements are objectively accurate, because no unambiguous standard of accuracy is available. Nevertheless the strong convergence of the employee judgements with the assessments obtained from the researchers, from supervisors and from the Turner and Lawrence procedures does suggest that the employees were able to provide generally non-distorted descriptions of the characteristics of their jobs—reasonably well grounded in reality. "

Both Buck (1972, p. 36) and Hackman and Lawler (1971) make the point that it is the work reality, as seen through the eyes of the worker, that is necessarily the cause of any work-related strain or behavior change he undergoes. For their purposes the "subjective experience" of the work environment is the important independent variable. However, we would like to use our findings to indicate whether and in what manner the "objective reality" of work environments in modern society should be changed (independent of idiosyncratic individual "preference" for one environment over another). Thus we go to some length in a following section (2B) to confirm the objective validity of the self-report measures, and in Chapters 4 and 5 attempt to "purge" the indicators or assess the nature of individually specific response characteristics.

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*Hackman, J.R., and Lawler, E., "Employee Reactions to Job Characteristics," Journal of Applied Psychology Monograph, 1971. The average correlations between employee, researcher and supervisor job ratings was r = .90, .78, .66, .65, .58, -.10 respectively for "variety, autonomy, task identity, dealing with other, friendship opportunities and feedback. Excluding the apparently "biasable" feedback score the average correlation is .75.

2B-2: The Job Content Dimensions

a.) Psychological Job Demands

This dimension is a summarized report by the worker of the "taxing" and psychologically demanding character of his job. We would expect it to be the environmental variable most closely related to work "stress." The measure is a Guttman scale composed of three questions: is your job hectic; is your job psychologically demanding; are you psychologically exhausted when you come home from work?*

Table 2-2

Psychological Job Demands	Frequency	Label-Position Accuracy	Ave. Intern. Correl. (Yule's Q)	Scale-Item Correl.
1) -No- to all questions	26.3%	100%	—	—
2) Is your work hectic? -Yes-	41.3	87%	.58	.33
3) Is your work psychologically demanding? (and hectic) -Yes-	22.4	90%	.67	.49
4) Do you often feel psychologically exhausted when you come home from work? (and hectice, and psych. demanding) -Yes-	9.9	100%	.73	.56

coeff. of scalability = .78 / coeff. of reproducibility = .94 / n = 2392

This measure of work is the most comprehensive job content measure developed, and it is the one most potentially influenced by enduring characteristics of the individual (psychological variables). At the same time other studies of the effects of the work environment on life outside the job identify such a measure (job "load" or "tension")** as the most successful predictor of mental health, and one that is also correlated to behavior styles and satisfaction attitudes. The main body of literature relating lift stress to mental health and illness utilizes scales of *total* life stressors to predict illness risk: individual events are weighted by their severity (Holmes & Rahe, 1967) and summed over the life span. Earlier studies have shown much lower correlations between *single* stressful events and illness. We would expect a similar phenomenon for job stress: unless all job demands are considered, the correlation between objective job demands and outcome indicators is likely to be low (although, Caplan, 1975, p77).

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*This level refers to outside-the-job stresses as well and is generally excluded in the work-leisure analysis.

**Caplan et al. (1975), op. cit., pp. 71-78. Quinn et al., Survey of Working Conditions 1970 Final Report; Institute for Social Research, University of Michigan, August 1971, p. 226.

One difficulty with a self-report measure of "demanding job" is the potential subjectivity of response. Almost all schools of research on the relationship of problematic environments to illness suggest that either the perception of stress or its impacts are modified by personality characteristics of the individual (although there has been little success in reliably identifying these characteristics - see discussion p. 63).

The major source of error in this scale is the question "Is your job hectic?" Of the 702 employed individuals who said their job was *not* hectic, 20% reported that their job was either psychologically demanding or psychologically exhausting. From other experiments on the Guttman scale relationship* with physical sources of stress we know that individuals may also report physically demanding jobs as hectic; half of the jobs reported hectic have at least some physical demand at the work place. Thus, a nonhectic job appears to have neither major psychological nor physical demands, but the correlation of the "hectic job" variable is substantially higher for psychological than physical demands scale (.331 vs. .226).

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*Guttman scale:
1) Job not hectic 21%
2) Job hectic 43%
3) Job with other physical demands (not lifting 125 lbs) 24%
4) Physically exhausted in the evening 12%

Construct Validity

There is evidence, summarized below, that the indicator probably does strongly reflect the psychologically demanding character of the work itself, within the limits of the inherently inexact levels of a three or four position scale, although the exact limits on accuracy are hard to assess. 1) The Psychological Demands measure, and others similar to it in the literature, do correlate well with summary measures of objective job demands.* 2) Life problems outside the job do not appear to severely affect the specific job demand response.** 3) The demands levels are higher in industries* one would associate with "psychological" demands. 4) The effects of individual perception do not cause all of the stress-strain association,** and indeed may understate the relationship. Some findings

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*Sensitivity to Specific Job Characteristics in the Swedish Data

The Psychological Job Demands measure is affected by the objective work realities that would be expected to induce stress measured in the Swedish data: piece rate work; anticipated job loss; lack of rest breaks:

1) Workers with individually negotiated wage contracts (75% are piece rate workers) have higher levels of stress than fixed wage rate workers (32% psychologically demanding jobs vs. 20% average). Other job content indicators (Physical Stress, Intellectual Complexity, Schedule Freedom) do not show such variation with contract form.

2) There is also clear evidence in our data of the linkage between job insecurity and psychological stress. While the anticipation of losing one's job does not lead workers to report significantly higher incidence of psychologically demanding jobs, it is associated with more frequent reports of feeling "psychologically exhausted after work" (18.4% vs. 9.9% average).

3) The most highly correlated variable with a "hectic" job is the lack of many rest breaks during the work day (r = -.24; n = 247 male workers with under 15 years experience).

**Sensitivity to "Non-Job" Influence

The Psychological Job Demands measure is not particularly sensitive to non-work stressors. There is an exception, however. Conditions such as future job loss or family problems and urban location do have an impact on response to the question, "Are you psychologically exhausted after work?" (which is removed in most of our computations). There does not seem to be an impact on the direct work assessment question: "Is your job psychologically demanding?":

1) The correlations between the Psychological Job Demands Indicator and: a) family problems; b) having a small child at home; and c) childhood problems, are +.07, +.02, +.07 respectively (men age 31 to 50).

(cont'd.)

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2) Large urban areas have only slightly more workers reporting psychologically demanding jobs than in smaller cities and towns, but double the incidence of psychological exhaustion: 12.6% vs. 7.6%.

*Distribution by Industry and Occupational Level (see Appendix for industry definitions)
The job content distribution tables (Appendix Table A-2,3) indicate that psychological demands are higher in the direct-service industry (and service industries in general), where the job requires "professionally competent and emotionally creative care," and personal interaction; they are lowest in the construction industry where physical job demands are much higher (r = +.05 services / r = -.19 non-construction production).

Industry differences in psychological job demands scale are less significant, however, than differences for the other job content indicators. One reason is that the scale position, "hectic" work, may also include the counteracting effects of physical job demands. If we observe only the psychologically demanding and exhausting responses, we find they do indeed show higher industry differentiation: 25% of working class employees in the psychologically demanding "direct service" and "commerce" jobs report psychologically demanding or exhausting work, vs. 13% and 16% of workers in construction and agriculture respectively. 55% of manufacturing industry managerial and white collar workers face such levels of psychological job demands, vs. only 38% of the managerial and white collar workers in administration (traditionally regarded as "low pressure—soft" jobs).

**Personality Factors and Subjectivity in Response
The effects of "personality"—while important qualifiers of job demand self-report data—cannot be considered the sole cource of the observed variations (Chapter 4 and 5) in job demands and mental strain or behavior. The correlation between one useful measure of personality orientation (childhood life events) and the psychological job demand indicator is substantially lower than the correlation between the job demand indicator and the mental strain dependent variable (r = .15 vs. r = .07). Several additional observations will be elaborated in greater detail in other sections:

1) The effects of "personality" may be to understate the work environment-mental strain/behavior correlations, rather than to overstate them (see page 63).

2) Our findings in Chapters 4 and 5 do indeed find substantial individual variation in the job demands-mental strain associations. We can identify individually different response patterns (tiredness vs. affective symptoms vs. psychosomatic symptoms). However, the effect of the psychological job demand indicator is consistent in producing some type of effect in almost all respondents. We could most easily summarize this finding by stating that it is not so much perception of stress that differentiates subjects, as the type and timing of response to stress. (This would accommodate Janis' finding about the "work of worrying"; see page 63).

suggest that if a broad range of symptoms on long time duration for outcome effect measurement is utilized, the effects of individual perception begin to cancel out.

Critique and Suggestions for a Future Questionnaire

Other studies have used similar aggregated measures (such as Quinn, 1971, "Job-Related Tension," and Buck's "Job Pressure," 1972), and found, as we do in Chapter 4 that they are significantly associated with mental strain. Although these sources of evidence help confirm the validity of the measure, they do not alleviate its central problem: that the measure lacks specificity. We can only suggest how we would gather data in the future: Separate categories of psychological job demands should be established to measure:

1) Time Pressure
2) Task Proficiency, Fear of Errors, Pressure for Skill Acquisition, Pressure from Lack of Tool or Resource Availability.
3) Career Security and Potential Advancement Opportunities
4) Supervisor/Peer Pressures*

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* These demands are really an independent dimension, Job Social Relationships area, in our model, but pressures to conform, obey, conflicting demands, are obviously important sources of job demands which should be independently measured.

2B-2 b.) Physical Stressors: Job Exertions and Discomforts (and Job Hazards)

The correlation matrix below provides empirical evidence for separating one group of physical "exertion and discomfort" variables from another set of physical "hazard" measures. A theoretical reason for separating the variables is that they may measure two dimensions of "stress" which operate quite differently on a workingman's life outside the job. The worker's "perception" of the stress is important for "exertions" but not for purely physiological hazards (Caplan et al., 1975).** For example, presence of carbon monoxide has its detrimental effects on health whether or not the worker is aware of its presence, but it may not affect his daily behavior.

Unlike our other dimensions, where a series of questions could be organized into cumulative scales measuring a relatively precise concept, no such techniques were simply applicable to our data on physical stress in the work environment.* In part this problem results from the fact that all of these variables are highly correlated and it is difficult to iso-

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*Several Guttman scales do exist, but they do not by themselves appear to circumscribe the variance in the physical stressor variables:
A) Do not get dirty (50%); get dirty (19%); dampness, smoke, gas (20%); continuous noise, occasionally deafening (19%); heavy vibration (2%).
B) No major physical demands (other than heavy lifting) (26%); other major physical demands (23%); heavy lifting (125 lbs.) (18%); sweaty every day (13%).

**In developing our hypotheses about the impact of stress in the workplace we referred to Selye's general stress syndrome, which suggests that too little, as well as too much stress, may be damaging to the organism. Although it is really a hypothesis to be proved, we will take as an assumption that the dangerously low levels of workplace hazards (if they exist) are far exceeded in most work environments, and therefore any increment of noise, heavy vibration, dangerous substances, and irritation can have only negative effects on the worker. The same may not be said of the lower levels of physical exertion and discomfort, however, where some amount of outdoor activity and physical exertion can have the positive effect of late one variable that summarizes the general phenomenon of physically demanding work. Additive (Likert) scales that encompass a large portion of the variance are used instead.

In the Swedish questionnaire the following question groups were consolidated into nine indicators, which are then correlated in the matrix shown in Table 2-3. "Physically exhausted after work" and "Sweaty work" are excluded from the list as being too dependent on individual physiological differences.

Table 2-3

Correlation Matrix of Physical Stressors at the Work Place*

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1. Heavy lift	1.00								
2. Other physical demands	.33	1.00							
3. Damp	.43	.33	1.00						
4. Dirty	.44	.37	.45	1.00					
5. Outdoor	.43	.30	.72	.39	1.00				
6. Dust, gas, smoke	.35	.31	.39	.52	.36	1.00			
7. Dangerous substances	.25	.18	.28	.33	.20	.32	1.00		
8. Heavy vibration	.27	.21	.31	.29	.33	.29	.20	1.00	
9. Noise	.23	.21	.24	.44	.21	.43	.27	.30	1.00

The table above shows clearly that sources of physical stress are all highly inter-correlated in the Swedish data. A distinction can nevertheless

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preserving the individual's physical condition (although too much, we find, is indeed correlated with tiredness and poor health).

*Employed workers, 18-66, n = 1876 (not professional, self-employed, or farmers).

be made between two groups of variables in the list above:

a. 1. Physical exertions: heavy lifting, other physical demands
(Cronback's alpha = .515)

2. Physical discomforts: inside/outside work; damp/wet work; dirty work (soiling)
(Cronback's alpha = .714)

1. + 2. Physical exertions and discomforts
(Cronback's alpha = .703)

b. Physical hazards: dirty work (chemicals); irritating gases, etc.; noisy work; vibrations; dangerous substances
(Cronback's alpha = .714)

We find first that the top group of variables (a) has the highest internal correlation. The best predictor of this group of variables measuring physical exertion and discomfort is the "dampness" question, suggesting primarily outdoor work (outdoor-dampness correlation .72). These variables describe work stressors especially common in basic industries such as farming, forestry and construction.* The physical exertions and discomforts are combined since the Cronback's alpha statistic is higher for the combined groupings than for the separate clusters.**

Examination of the second set of variables, labeled "physical hazards," shows empirical linkage to the physical exertion and discomfort variables primarily through the "dirty work" measure—the other correlations between the two groups are significantly lower than their internal correlations.* Its Cronback's alpha statistic also suggests a reliable indicator (.714). These measures are also concentrated in special high technology industries: lumber and paper processing, iron and steel foundries, iron and steel manufacturing, transport vehicle manufacturing, the construction industries, and lumbering.**

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*Lars Sundbom, op. cit.

**The combined indicator of physical exertion and physical discomforts at the workplace has a Cronback's alpha of .70, respectably high for interview data. Although a slightly higher Cronback's alpha (.73) can be obtained by also including Noise and Heavy Vibration, these questions generally correlate more highly with the "physical hazards" group. The indicator retains its ability to contain most of the covariance in important subpopulations as well: young workers .769, construction workers .701, mass-processing and manufacturing industry workers .759.

Table 2-4: Incidence of Physical Stresses in the Work Environment

1. Not exposed to any of 5 physical stressors (lifting 125 lbs., other physical demands, outdoor/non-normal temperature, dampness, dirty work)	45.9
2. Exposed to one stressor	24.3
3. Exposed to two stressors	13.0
4. Exposed to three stressors	7.9
5. Exposed to four stressors	8.8

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*Avg. internal correlation, physical exertion and discomfort:	.42
Avg. internal correlation, physical hazard:	.30
Avg. cross correlation (minus dirty work):	.28

**This group of variables clearly localizes the impact of conditions against which much occupational health legislation is directed. The highest incidence of dangerous substances is in the rubber and chemical processing industries (47%), followed by non-home building construction (39%). Airborne irritants are most common in home building (72%), other building (63%), stone processing (62%), iron and steel manufacture (61%), transport carrier manufacturing (62%), iron and steel works (56%), lumber and paper processing (57%), chemical and rubber processing (55%). Sundbom, Lars, De Forvärsarbetandes Arbetsplats Förhållanden (Låginkomstutredningen, Stockholm, 1971), p. 51.

One of the findings in this study with potential legislative impact: our measurements show that the incidence of hazards that have been previously identified as causes of biological injury (carcinogenic substances, excessive noise, etc.) are highly correlated to "softer" work place problems. These in turn(see Chapter 4/5)are highly related to the social problem areas of passive leisure, inactive political behavior, and poor mental health. The implication of this finding is that the previously demonstrated linkages between physical hazards and health problems may be in part "spurious correlation," really due to psychological job demands and low job discretion. The effect of the "soft" stressors may have important aggravating effects for these illnesses that should be experimentally evaluated (see Ashford, op. cit.).

In summary, our measure of the incidence of physical sources of stress reflects the incidence of tiring, demanding, dirty and uncomfortable working conditions, the effects of which are clearly and unmistakably felt on the daily life pattern of the workman. We have separately tabulated exposure to dangerous substances,* which, although they may endanger the workingman's life, may also escape his direct attention (such as the presence of an unknown poisonous chemical), and have less effect on his leisure and political behavior.**

Construct Validity

In this case we have a broader range of detailed job content questions so that lack of specificity is not the major problem. These measures of physical job content in the Swedish data are richer than information on physical conditions available in either the U.S. Survey of Working Conditions 1969, 1972, or the I.S.R. Survey of Job Demands and Worker Health 1972. We can confirm the construct validity of physical job demands from findings in the industry/class national job content distribution tables (Appendix Table A-2).*

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*The dirty work variable appears in both indicators due to its high correlation with both the discomforts-exertions indicator and the hazards indicator (see discussion above). There is, however, a manner to separate these two contributions of dirty work: level two of the "dirty work" variable is "light soiling" which could be combined with the other discomfort variables to improve the measurement of those work environments which are manual-labor intensive. "Soiled with oils, colors" represents a potentially poisonous working condition, and is added to the "hazard list."

**Noise and vibration are treated as a separate variable in later regressions. The incidence of noise and vibration correlates more highly with physical hazards than physical exertions. Nonetheless, 47% of workers with significant noise and vibration are also among the 16% of the working population with four or five physical discomforts and exertions.

Critique and Suggestions for a Future Questionnaire

The primary problem for this indicator is that we have described a mechanism of "socio-psychological functioning," and do not know whether it is applicable to physical as well as psychological challenges. Even if physical demands do conform to the structure of our model, we may fail to find predicted results because corresponding measures of physical freedom are not available.** In addition to the present question about heavy lifting and "other" physical demands, measures of rapid or agile motions, or significant stooping and twisting could be included to improve the scope of the physical job demand measure.

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* Distribution by Industry and Occupational Level

1. 84% working class employees in the construction industry report more than one of the physical exertions or discomforts on their jobs, while only 8% of managerial/white collar employees ("bureaucrats") in the administrative industry report more than one physical stressor. 38% of working class employees in manufacturing report that level of physical exertions and discomforts on the job.

2. 42% of the male work force in non-rural Sweden reports more than one physical stressor, while only 10% of the women report such jobs.

3. 48% of Sweden's blue-collar trade union (L.O.) report more than one physical job stressor, vs. only 17% of the union for university educated employees (S.A.C.O. and affiliates).

**Gardell (1971), for example, includes questions on "physical freedom of movement." The 1974 version of the Swedish Level of Living Study also includes such questions.

c.) Intellectual Job Discretion

With this indicator we hope to measure the extent to which the worker is allowed to exercise decision-making capacity and skill on the job. The indicator is composed of the worker's evaluation of skill level (in terms of education) and his response as to whether the work is monotonous/repetitious (lacking in variety). We reason that work which is repetitious, even if it may have once required skill, loses its capacity for intellectual challenge after constant rehearsal.

The estimated general educational level of the job is not a very precise measure, but it is positively correlated to job-related skill in several studies.[*] In U.S. data the general education level of the job is correlated positively with specific skill requirements in dealing with data and people (but not things).[**] Monotonous or repetitions work is also negatively correlated with measures of skill and intellectual complexity of the job in other job content studies.[*]

Ideally this scale of intellectual complexity measures the intellectual complexity that the work demands, not the intellectual capacity the worker possesses, or his formal education.[***] However, the job "skill" question is based on the employee's evaluation of the training level and must be treated carefully because it potentially conveys information about the worker's own education (even though this is not asked) as well as the intellectual complexity of the job itself. To avoid this difficulty in the analysis below we essentially use only a part of the data in this question: "Does the typical worker with your job have any education over the statutory minimum?" (seven years in Sweden). This is interpreted as a measure of skilled vs. unskilled work.* In Chapter 4 we adopt a further strategy

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[*] Gardell (1971), *op. cit.*; Kohn and Schooler (1973), *op. cit.*

[**] a) The U.S. Bureau of Labor Statistics measures job intellectual requirements in terms of training time—in two components, however: general and job-specific training. The "general aptitude level" is correlated to the people and data scales, but not the things skill scale. (Les Boden, Harvard School of Public Health, personal communication.)
b) Kohn and Schooler (1973) measure of "substantive complexity of the job" is a factor in which complexity of work dealing with things loads negatively. Skill with people and data load positively.

[***] There are major discrepancies between reported education and reported job complexity. This discrepancy is much higher among younger workers who report considerably higher levels of education than their jobs commonly require (see p.115). For middle-aged workers this discrepancy is reduced as reported job complexity increases (perhaps as responsibility increases) and attained education declines. Both decline for elder workers over 50. Quinn et al., U.S. Survey of Working Conditions *Final Report*, 1971, find a similar relationship. They use the discrepancy as a measure of educational underutilization—55% of the U.S. work force has such a discrepancy.

Table 2-5: Intellectual Job Discretion	Frequency	Label-Position Accuracy	Ave. Intern. Correl. (Yule's Q)	Scale-Item Correl.
1. Is your work monotonous/repetitious? -Yes- and not "educated job" (see below)	15.7%	100%	.65	.39
2. Do most people with your type of job have education over elementary school (7 years)? -No- (and no monotonous/repetitious work)	44.9	92%	.65	.57
3. -Yes- 1-3 years education (and no monotonous/repetitious work)	21.5	100%	—	—
-Yes- 4-6 years education (and no monotonous/repetitious work)	10.9		**	
-Yes- over 7 years academic secondary school plus some university education (and no monotonous/repetitious work)	6.9			

coeff. of reproducibility = .94 / coeff. of scalability = .87 / n = 2392*** to isolate the effects of the job. We hold "actual education" constant for half of the work force and examine the work-leisure relationships for workers with different intellectual job discretion. In this form the job content measure indicates the frequency of "unskilled and monotonous/repetitious work" among workers who have constant (7 years minimum) education.

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*This is 50% of the male non-rural work force (18-66 years).

**These higher skill levels correlate more strongly with the lack of monotony/repetitious work (.86 for levels 4 and 5).

***This figure includes approximately 60 professionals and 110 self-employed businessmen and 35 farmers asked the monotony question only. The value for educational demands was equated with actual education for these 172 people.

Construct Validity

The intellectual job discretion indicator is a broad range measure and thus we rely on several types of construct validation. First, we find evidence that the indicator reports characteristics of the job and not just the worker's education.* In addition we examine: 1) theoretical findings about task discretion and job content distribution findings,* and

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*Characteristic of the Job—or the Worker?

We find several pieces of evidence to confirm the fact that intellectual discretion reported for the job does not simply reflect the individual's own education level:

1) Within the group of workers who have only primary education (50% of the non-rural work force age 18 to 66) we can identify significant groups of workers with both low intellectual discretion (monotonous/repetitious jobs), and workers whose jobs are typically associated with more skill than a primary education implies. U.S. findings (Quinn et al., 1973) also confirm that 55% of workers have jobs whose intellectual requirement, measured in terms of education, differs from their actual education. The discrepancy between education and job intellectual discretion is somewhat higher for younger workers, perhaps because of their generally higher levels of actual education. But the discrepancy between "intellectual job discretion" and education does not appear to be a function of adjustment to the labor market which disappears after the first job. The percentage of workers with actual education over elementary level but "intellectual job discretion" at the elementary level or below remains approximately constant at 30% of the work force. The "underqualified workers"—representing 17% of the work force—do decline somewhat with increasing work experience.
Overqualified: 0-5 yrs. 31%/6-15 yrs. 35%/16-30 yrs. 26%/30+ yrs. 30%.
Underqualified: 0-5 yrs. 25%/6-15 yrs. 21%/16-30 yrs. 22%/30+ yrs. 14%.

2) Also, work-leisure findings generated in Chapters 4 and 5 with the intellectual job discretion indicator persist when actual education is controlled for.

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*Distribution by Industry and Occupational Level

Our job content distribution tables (Appendix) show that intellectual job discretion is lowest in the highly automated process industries where 26% have monotonous/repetitious-low skill jobs, and higher (13%) in the service industries. We can localize low intellectual discretion more specifically by isolating working class members of these industires. We find that Adam Smith's premonition about the intellectually debilitating effects of the industrial revolution are confirmed:

a) 40% of process industry workers have monotonous/repetitious-low skill jobs(vs. only 20% of agricultural workers - in our biased sample). Our findings suggest that it is only at the very highest technological levels that automation requires skilled workers. For automated jobs as a whole, the content of work is more likely to be monotonous and require little skill. This is consistent with Adam Smith's observation (The Wealth of Nations, New York: Modern Library, 1937, pp. 101, 127): "Not only the art of the farmer, the general direction of the operation of husbandry, but many inferior branches of country labor, require much more skill and experience than the greater part of the mechanic trades.... The condition of the materials which he works upon, too, is as variable as the instruments which he works with, and both require to be anaged with much judgement and discretion."

Other evidence of such a relationship is presented by Turner and Lawrence (Industrial Jobs and the Worker, Harvard University, 1965), who find in their study of 470 workers in 47 U.S. industrial jobs that a measure of "capital investment"—presumably equivalent to automated productive capacity—is negatively related (r = -.27) to "task identity"—an expert-rated index of autonomy of decision making and job related skill (which is also correlated to job satisfaction). There are also several sources which argue that high levels of automation are accompanied by higher skill—and job satisfaction—levels (Woodward, 1958; Faunce, 1965; Gardell, 1971; Blauner, 1965). Most of these findings support the existence of a "U"-shaped curve of technological development and skill (or satisfaction), where skill is lowest for "middle-technology" manufacturing jobs. Piore (1972) describes the process of skill division in the process of increasing technological complexity: one intermediate stage of development is accomplished by a bimodal distribution of both very low skill jobs,and high skill problem-solving jobs which adapt the work process to changing economic conditions.

b) The "bureaucracy" is less clearly associated with low levels of intellectual discretion. 34% working class members of the administrative industry report monotonous/repetitious-low skill jobs. This level is certainly higher than construction (13%), commerce (19%), or direct service (25%). However, it must be noted that a relatively high percentage of lower level workers in the administrative industry have "skilled" jobs: 22% vs. 14% for the working class overall and 4% for process industry workers. (55% of administrative managerial and white collar workers have "skilled" and non-monotonous jobs.)

(cont'd.)

2) related correlations in the Swedish data.*

Critique and Suggestions for a Future Questionnaire

The primary shortcoming of this indicator is again lack of specificty. Several other studies of job content have made use of substantially more elaborate data about the worker's use of skills on the job (Caplan, 1975; Gardell, 1971). However, the general result of all these studies has been to aggregate all the detailed information into one measure of "job challenge or complexity" (see discussion, page 90),** which in their final

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c) In addition the intellectual job discretion measure is the clearest differentiator of the Swedish occupational social class categories. While only 18% of working class males report a job which typically involves training beyond elementary school, 93% of social class I males report such jobs, and while only 2% of social class I males report jobs which are "monotonous/repetitious" and non-skilled, 22% of working class males (33% of working class females) report such jobs.

*Potential for Creative Involvement (Researcher Coded)
We developed a "researcher coded" measure of "task identity" to assess the degree of "mentally creative emotional involvement" in the job for 57 different occupational types and 37 industry categories. This indicator correlated more highly with the Intellectual Job Discretion indicator (r = .30 Kendall's tau B) than with any of the other job content indicators. Industries were coded 0 to 3: representing at lowest level, emotionally uninvolving product output, and at the highest level, creative product output. Tasks were rated on the degree of autonomous decision making permitted from 0 to 2. The industry type and occupation type scores were added for each individual and then correlated with the Intellectual Job Discretion score.

**The range of questions included on Gardell's composite freedom and skill dimension spans both our 'Intellectual Discretion' and Personal Schedule Freedom measures (as well as several other areas):
1. A variety of task goals
2. Demand for concentration
3. Control over work process
4. General decision influence about work
5. Requirements for training
6. Economic responsibility
7. Consultation and cooperation
8. Freedom for social contacts
9. Physical freedom of movement

form are even less specific than the measure we adopt.

In its broad outlines Intellectual Job Discretion is similar to Kohn and Schooler's measure of "occupational self-direction." In both scales lack of variety in the work task identifies the lowest level of self-direction, and in both cases the top end of the scale is defined by a general measure of skill which really is restricted to skill in dealing with people and data (and not things).*

In order to minimize the bias against "skill in working with things" and maintain the broad applicability of Intellectual Job Discretion, we sacrifice the higher skill levels of the scale (which are more exclusively correlated with People and Data skills), and retain only the lowest general training level (any post-elementary education). In this manner we hope to be able to differentiate "craftsmen" from unskilled workers as well as more highly trained employees.**

A more accurate indicator of intellectual job complexity would allow separate assessment of skilled work with Things, Data, and People. In addition it would ask how often the worker felt challenged by a new problem; and to what extent the job represented an opportunity for enhancing some area of his competence.

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*Skill in dealing with things is not generally correlated with the education related general aptitude level in the Department of Labor data. Kohn and Schooler's measure of "substantive job complexity" is also based on a factor score in which skill and time spent in dealing with Things loads negatively, -.26/-.68, while for People and Data the respective loadings are positive, .82/.57 and .85/.65.

**Working class members of the construction industry (where craft apprenticeship is common) do indeed report higher levels of "skilled" jobs than process industry or manufacturing industry workers (20% vs. 4%, 10% respectively).

2B-2d.) Personal Schedule Freedom

In general this is a measure of the individual's ability to withdraw, at his own discretion, from the formal tasks of the job and participate in the informal behavior . It can also serve as a rough measure of freedom to engage in outside social relationships. The questions are: Can you place at least one private phone call during the work day; receive a visitor for ten minutes; leave on a half-hour errand without consulting the supervisor; or do you have an employer who is not concerned with punctuality and schedules?

Table 2-6

Personal Schedule Freedom	Frequency	Label-Position Accuracy	Ave. Intern. Correl. (Yule's Q)	Scale-Item Correl.
1. -No to all questions-	8.0%	100%	—	—
2. Can you place at least one private telephone call during ordinary work time? -Yes-	21.0	78	.43	.43
3. Can you receive a private visitor at your work place, say for ten minutes, during ordinary work? -Yes-	30.4	92	.69	.55
4. If you need to go on a private errand, can you leave the workplace for about half an hour without speaking to your supervisor? -Yes-	20.9	68	.63	.54
5. Is your employer a stickler for punctuality and schedules? -No-	19.7	100	.51	.44

coeff. of scalability = .64 / coeff. of reproducibility = .91 / n = 2392*

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*Approximately 60 professionals, 110 businessmen and 30 farmers were assigned a value for this variable, since the questions were not asked. All these broad occupations imply considerable freedom and so the highest scale category was assigned.

While the indicator does not explicitly measure "machine paced" assembly line work, the responses at the low end of the scale clearly include this possibility. A "punch clock" question is highly correlated to the scale, but was excluded from the scale because of non-uniformity* in use of such devices across industries.

The greatest departure from a perfect Guttman scale for this set of time freedom questions comes at the high personal freedom end of the scale; a substantial number (18%) of individuals who said their employers were not sticklers for punctuality, responded nevertheless that they could not leave for a half hour errand, although they could receive a visitor for 10 minutes. At the opposite end of the scale another deviation occurs: 30% who said they could not make a telephone call could nevertheless receive a visitor for 10 minutes. The scale errors table suggests that the broadly phrased question "Are they concerned about punctuality and schedules?" is the least accurate step in the Guttman scale. It is also less specifically interpretable. Thus a better scale would have resulted by removing it.

Construct Validity

There are several findings from our Swedish industry/class job content distribution tables (Appendix Table A-3) that confirm the construct validity of this indicator. However, personal schedule freedom does not show as strong a variation in these tables as the intellectual job discretion measures, indicating perhaps that the industry differences are not as important as differences in specific firm policy for this job dimension.*

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* This would not affect the correlation but does affect Guttman scale positions and error totals. Use of a time punch is much more prevalent in the production industries, and relatively rare in the service industries. This non-uniformity would introduce considerable error in a scale constructed for industry-wide use. However, within the production industries it might well add valuable information to the personal freedom indicator.

Critique and Suggestions for a Future Questionnaire

Since this indicator is based on fairly detailed questions about the work situation its validity does not raise serious questions. The problem in this case is that only one aspect of "freedom of action" on the job is really measured: freedom to leave the formal work task. A more important measure of job discretion—freedom to allocate time resources—is not directly measured by our indicator although it would appear to be correlated. The real problem, then, is how "important" is this measure of job content. To its credit this measure of ability to regulate one's involvement with the formal work task is associated with increased job satisfaction (Turner and Lawrence, 1965),** increased autonomy (Young and Willmott,

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*Distribution by Industry and Occupational Level
1) The construction industry offers its workers—who are generally mobile on a construction site—more personal freedom than workers in the high automated and machine regulated process industries. Only 18% of lower level workers in the process industries may leave work for a half hour errand without their supervisor's permission, while 40% of construction industry working class employees may do so.
2) Men have significantly greater personal schedule freedom in the work place than women. 47% of men may leave on an unscheduled half hour errand while only 31% of women may do so. For full time men and women these figures are respectively 47% and 30%.
3) The personal schedule freedom measure is also correlated to the absence of a time punch clock (r = .24) and to the total length of rest breaks during the day (r = .12, n = 333 male workers with over 15 years experience).

**Turner and Lawrence find that the only consistent job content correlation of job satisfaction is a measure of the amount of time the worker was allowed to leave the work place (similar to our question: Can you leave work for a ½ hour without permission). The broad importance of personal freedom to allocate time resources at work is indicated by the fact that several researchers identify lack of it as a primary cause of "boredom" (Wyatt et al., 1929) and job fatigue. Dickson notes that freedom to personally schedule rest breaks on the job is what butchers mean by job "variety" (Dickson, 1971).

1973), and increased "activation level" (Scott, 1966).* A more broadly relevant measure should include the following types of questions relating to schedule freedom:

A. Can you plan your day or weekly schedule?

B. What range of freedom do you have to interact with work mates?

C. Are you physically restricted to one location at the work place?

Another broad area of job discretion which our data barely touch on is "job responsibility and closeness of supervision."** In this area questions should be included to measure:

A. Extent of supervisorial authority, or closeness of task supervision.

B. Extent of personal responsibility for the quality or quantity of output.

C. Responsibility for factors outside one's personal control.

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*Scott, Activation Theory and Task Design, 1966: "Stretching, alternating positions...leaving to visit the water fountain, another department, or the rest room...social activity including conversation with fellow employees. The development of complex group relationships...also introduces variation which may serve to increase the activation level.

"It is obvious that much of the impact-increasing behavior...is extrinsic to the task...the individual may also introduce variation into the task itself" (pp. 15-16).

**There is data about whether the worker has supervisorial authority, but it has been combined into an index with other "institutionally guaranteed job status protections."

2B-3: Summary Statistics

The indices discussed above vary in reliability from .91 to .65.* The Guttman scale statistics (coef. of reproducibility/coef. of scalability) are:

Psychological Job Demands	.939 / .778
Intellectual Job Discretion	.974 / .909
Personal Schedule Freedom	.908 / .743
Institutionalized Job Authority & Security	.907 / .650

Cronback's alpha statistics:

Physical Job Demands (exertions & discomforts)	.703
Physical Hazards	.714

The distribution of cases on the dimension is also important. Because of interactions and non-linear predictions, simple least-squares linear models cannot be routinely used to test the work-leisure model. The alternative, multidimensional cross-tabulations, requires a rather uniform distribution of cases along indicator and control variables to prevent cell frequencies from becoming too small.**

The final dimensions often display higher intercorrelations than their component variables, but their functional independence is confirmed by the fact that important work environments exist representing all combinations of the dimensions. These sub-categories of job content in fact isolate workers with the highest and lowest mental strain and rates of leisure and political participation.

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*The Guttman scale coefficients of reproducibility are all above the required .90. The measure of reliability (more nearly equivalent to Cronback's alpha) is the coefficient of scalability, which are over the recommended .60.

**Substantial consideration was given in the construction of dimensions to have indicator dimensions with large and uniform variance. For example, our total sample of 2392 working individuals includes 1466 males. If we select three categories of interacting job freedom and job demand dimensions (for nine cells), control for the relationship within three work experience categories, and for two types of individual background, the average cell would contain only (assuming independence) 1466/54 = 27 individuals. This is a sufficient average cell frequency for most statistical tests, but there is little margin for error. Differences in frequency distributions of the job content measures as great as 15% x 20% (instead of 33% x 33%) change the cell frequency to 10 instead of 27—too few cases.

Table 2-7

Final Indicator Correlations

Working Males Sweden 1968 (excluding self-employed and farming) n≈1150

								$\bar{m}$	σ	scale
Psyc. Dem.								2.18	.90	(1 to 4)
Phys. Dem.	-.11							2.37	1.48	(1 to 5)
Intell. Disc.	.23	-.33						2.52	1.11	(1 to 5)
Pers. Sched.	.07¢	-.14#	.30#					3.19	1.09	(1 to 5)
Institut. Protect	.27	-.30	.47	.28				2.63	1.84	(1 to 6)
Wage	.28	-.26	.57	.27#	.48#			2.50	.38	(log Skr/hr)
Fam Inc.	.26	-.11	.24	.05¢	.28	.46		3.05	.58	(log 000Skr)
Education	.10	-.31	.64	.25#	.29	.50#	.04¢	2.09	1.59	(1 to 5)

The correlation matrix above relates the job content indicators to other measures of occupational circumstance. In general there is a moderate colinearity between Psychological Job Demands, Intellectual Job Discretion, and Institutional Job Status Protections. Physical Job Demands correlate negatively with this entire group. Personal, Schedule Freedom appears to be more independent.

Differences in correlations that occur when the working womens population is included are denoted(#). The correlational between Personal Schedule Freedom and the other indicators drops when women are included, confirming our earlier observation that women have lower personal freedom across a wide range of jobs. The correlation between education and wage also drops.

When one age-experience cohort is selected from the full working male population, other differences occur(¢). Schedule becomes more highly correlated to the other job content indicators(suggesting an independent age contributation to schedule perogatives), and family income finally finally becomes more highly correlated to education(r=.33 for men age 31 to 50).

Overall Critique

There is a major area of omission in the Swedish measures of job content: notably information about relations with supervisor, co-workers, and social process factors introduced by the complex organizational structure of the work place. Except for this exception, the Swedish data can be recommended on the basis of its broad coverage of job content: both physical and psychological demands, and both formal and informal measures of job discretion are included. The flaw in the data is that while broad areas are covered in the aggregate, important sub-dimensions are not specifically measured(such as the sources of psychological job demands).

Another shortcoming, applicable to two of the measures, is that the information comes from the worker's broad aggregate judgements about his job, and thus prevents specific inferences about the impacts of the work environment at the detailed level. This quality also raises questions about possible subjective bias. Support of objective validity can be obtained in most cases from national distribution data, correlations with more specific variables, and by restricting the use of the indicator (in Chapters 4 and 5) to the range where its accuracy is least questionable. In this manner we can make a strong case for the fact that the indicators do roughly measure the job content that their labels imply.

In spite of these "bracketed" confirmations of validity, however, the lack of detailed specificity still limits the utility of any findings for specific "job design" strategies. Under these circumstances our hope will be to trace out the broad pattern of potential impacts of the work environment—and include an unusually large array of "controlling factors"—in such a way that will facilitate orientation of and comparisons between later studies which may be more limited in coverage but are more refined in measurement.

Chapter Three

The Leisure Activity Indicators

3-1: Patterns of Leisure Activity—A Summary

A leisure pattern is defined as a commonly occurring combination of leisure time activities within the population. Before we approach the problem of how to measure what this concept does imply, we shall sharpen the definition by listing alternative formulations which are not included:

A. A leisure pattern is not a daily time budget.

B. A leisure pattern is not a "percentage" of the population who engage in a particular activity.

C. A leisure pattern is not a subjective measure of satisfaction in leisure.

D. A leisure pattern is not a mapping of friendship or kinship networks.

E. A leisure pattern is not a combination of activities which result only from a common response to an external influence, but is instead a relatively invariant association of alternative measurements, of a presumed underlying dimension of leisuretime activity

Technically, our method for discovering patterns of leisure will be to use factor analysis to investigate covariance structures among the set of leisure activity variables. We ultimately generate eight patterns from a Varimax rotation of factors extracted from a "Principal Factor" factor analysis program. In the non-rural population the eight factors account for 48% of the common variance among the 24 variables.*

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*For the whole population factor analysis Joreskog's Method was utilized, and somewhat less of the common variance was accounted for (35%). The first eight "latent roots": 7.05 to 1.15.

The Boundaries of the Analysis: "Active" Leisure and Political Participation

Examination of time budget allocations for leisure time in Sweden and the U.S.* suggest that the 24 leisure activity measures used from the Swedish data tend to overemphasize active participation in discrete, easily identifiable recreational and political pastimes. The significant blocks of time that are omitted are generally leisure "relaxations," rather than leisure "activities": TV watching, unspecified rest and relaxation, and family socializing activities.**

Our method for discovering leisure patterns is to use factor analysis to investigate correlations between activities to find the most commonly occurring combinations of leisure activity within the population. The methodological issue of what activities are to be included within the "com-

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*Hammer and Chapin, 1972.

a. Family and Non-Family Socializing (non-family activity is the major component)	31%
b. Participation in organizational activities, cultural activity, hobbies, promenades, sports	10%
c. Passive Diversions such as TV, reading (movies, radio, spectator sports account for about 7% of this category)	51%
d. Rest and Relaxation	8%

**This may account for our finding that for nine of ten dimensions of leisure and political participation individuals with active jobs are more active in their leisure. Individuals with what we have defined as "passive" work may be simply devoting more of their time to activities not included: relaxations and more "privatized" leisure (Wilensky, 1968). We should note that individuals with the heaviest job demands are not the ones who spend the most time in recreation and "privatized" leisure. Also the presence of young children does not shift the leisure activity level substantially, although the type of active leisure does change.

mon factor" boundary fundamentally affects the interpretations* that may be made about the final factors. Such a factor analysis is based on covariance _within_ the chosen activities (its latent dimensions or "intrinsic tendencies"), and not on "spurious associations" that appear because of common response to an outside influence. The factors chosen should remain internally correlated in any control populations, or under the impact of any external "causal" forces such as our hypothesized work environment effects. Tests of the chosen factors within subpopulations of age, sex and social class show that the factors are relatively constant.**

We have placed measures of pure social relationship in a logically separate category, to be tested in the future for reciprocal, causal interaction with the leisure activity factor pattern. There are significant associations between particular leisure activity factors and specific scales of social relationship: activity with friends, with relatives, and in organizations. We do not have data to test the community-specific influence of particular sets of friends on leisure choices—a social network analysis.

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*Another common theme in analysis of modern leisure patterns involves subjective and normative judgements about the lack of "creative" or satisfying leisure. Our data includes only more objective assessments of participation rates, so no direct analysis of individual satisfaction in leisure is possible.

**The differences are not so large that important factors disappear in any of the subpopulations, but are of interest in their own right. Patterns of leisure activity are least consistent in the under 30 population, and become more stable in older groups. Organizational participation (including labor and political party) changes its correlations most significantly. Women's patterns differ more than men's among the age categories, and there is the largest difference between men's leisure patterns and women's in the 30 to 54 age group (see Appendix).

Another decision about the boundary of "active leisure pursuits" was to include measures commonly referred to as political participation:* meeting attendance, attempts to assert influence on social issues, labor activity, and other measures of political participation. These activities are included because they represent a choice of free time allocation (some would consider these relatively "obligatory" choices) which display significant individual discretion and energetic engagement, our criteria for distinguishing active leisure pursuits.

A Varimax rotation produced eight consistent factors which account for 48% of the common and 36% of the total variance among 24 activities:

1. Intellectual Cosmopolitan Leisure: books, theaters, study circles, travel, musical instrument, (restaurants)
2. Active Physical Leisure: sports participation, sports organizations, hunting or fishing
3. Evening Social Leisure: movies, dancing, restaurants
4. Religious Participation: church attendance, religious or temperance organizations
5. "Suburbanite" Leisure: gardening, hobbies, cottage visits, membership in other organizations (non-political)

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*We have tried to examine the "pure participation" aspect of the political involvement cited. Activities that were purely "instrumental," such as voting, were excluded, as were passive memberships in labor and political parties.

6. **Mass Cultural Leisure:*** window shopping, "home" (non-news) magazines, auto excursions

7. **Elite Political Participation:** speaking at meetings, writing articles, attempts to influence, filing complaints

8. **Mass Political Activity:** political or labor union activity (more than passive membership), demonstrations

Several other composite dimensions are constructed on the basis of the factor analysis:

9. **Variations in Leisure Activity:** the number of different factor categories in the above list which the individual participates in.

10. **First Unrotated Factor of Active Leisure Participation:** before a Varimax rotation has been performed to equalize the variance among multiple independent factors, the factor program defines the largest linear combination of leisure correlations.** This, then, represents a unidimensional factor of leisure activity; the "center of gravity" of the chosen group of leisure activity correlations.

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*We do not have a T.V. watching indicator, although our guess is that it would load most significantly on this factor. Such an association is found by

**Amount of variance explained by the first unrotated factor varies somewhat by age and sex subpopulations. It is higher in the older age categories, lending credence to the maxim, "People become more set in their ways as they grow older."

3-2: Literature Review: What the Leisure Patterns are Not

A Leisure Pattern is not a Time Budget Study

Time budget studies generally begin by defining arbitrary categories of work time, travel time, maintenance time, etc., and then discuss "leisure" as the residual category. These studies are usually quite empirical and offer no positive theory of leisure time allocation. Indeed, an explanation of why leisure time is spent as it is, is hardly relevant in the time budget approach* since all other aspects of the daily schedule are considered the determinant inputs.

Since no direct time budget measurements of leisure activity were included in our survey, we do not really know how large a portion of "free-time" the activities included represent. We can make an estimate, however, from overall time allocation percentages from a Washington, D.C. study.**

a. Family and Non-Family Socializing (non-family activity is the major component)	31%
b. Participation in organizational activities, cultural activity, hobbies, promenades, sports	10%
c. Passive Diversions such as TV, reading (movies, radio, spectator sports account for about 7% of this category)	51%
d. Rest and Relaxation	8%

Examining the list of 24 leisure activities included in the Swedish data, we see that significant blocks of time are possibly omitted in the areas of TV watching, family leisure, and rest and relaxation. This orientation of the Swedish data implies that we will be investigating patterns of leisure activity as opposed to patterns of leisure relaxation. However, TV watching, which accounts for almost 32% of total discretionary time in the U.S. study (about 1.7 hours per day), is somewhat less common in Sweden.* The activity categories of rest and relaxation are also pastimes which may often be included under the more specific activity headings of the Swedish data.

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*The two classic time budget studies are Alexander Szalai, et al., The Uses of Time, 1972, the Hague-Mouton Publishers, and Pitrim Sorokin and Clarence Berger, Time Budgets of Human Behavior, Harvard University Press, 1939.

**Hammer, P.G., Chapin, F.S., Human Time Allocation: A Case Study of Washington, D.C., Center for Urban and Regional Studies, University of North Carolina at Chapel Hill, 1972.

A Leisure Pattern is not a Percentage of the Population

Another common type of leisure study tabulates frequencies of participation in long lists of leisure pastimes, and crosstabulates the results with categories such as age, sex and income.** Here also, no positive theory of leisure is presented and no obvious patterns often emerge from the wealth of unstructured data.

This paper discusses a different aspect of leisure: the connections and relationships between activities. We will attempt to show that the overall "gestalts" that emerge from the variable correlations represent a different type of information than that contained in simple frequency tabulations. Why the difference between frequencies and patterns? It is as if a traveler in a foreign land who asked an inhabitant what his countrymen usually ate for dinner was told only that a typical evening meal consisted of so many eggs, so many cups of flour, and such and such a complement of vitamins. The fact that these ingredients were combined into Spahetti in one country and Hard Bread in another is what the foreign traveler really wants to know. Our implicit criteria for understandable and plausible results in the study of leisure time appear to require the description of some of the connections between activities as well as the study of these activities in isolation.

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*A study of Swedish evening activities by Sveriges Radio indicates that 36% of the time between 6 pm and 10 pm (1.4 hours) is devoted to TV watching. The youngest (9-14) and oldest (65+) have significantly higher rates. —Anders Wikman, "Alternativa Kvällsaktiviteter," Sveriges Radio 25.10.1974. Rapport 35/74.

**For a good summary of leisure activity crosstabulation studies see Nils Anderson, Work and Leisure, 1960 and Robert Kleemeir, Aging and Leisure, Oxford University Press, 1961.

The fragmented nature of information conveyed by frequency tables often leads researchers to combine activities into groups. The Washington, D.C., study applies this approach to time budget frequency data: the percentage of days on which an activity is performed and the duration of the activity. Four major categories of discretionary time are developed on the basis of activeness of communication: Social Interaction and Participation involve two-way communication, while Passive Diversion and Rest and Relaxation involve only one-way reception of information from the environment. However, the internal coherence of the activities making up the four categories is never examined. The hypothesis that the activities grouped together represent alternative measures of the same "intrinsic tendency," which is the primary aim of our study, is not tested. The authors then attempt to build a causal model on the basis of the patterns developed and severe problems occasionally arise.* For example, television viewing decreases as income increases, and reading increases, but since both of these activities are aggregated in the Passive Diversion category the overall significant effects of income on the group of activities cancels out.

The Washington study calls its for categories "patterns of leisure" also, but what is really investigated as in other frequency studies, is the demographic distribution of activity participations. Our investigation of patterns focuses on the structure of correlations and we find that pastimes are not combined at random but display perceptable patterns which are consistent in many sectors of the population.

A Leisure Pattern is not a Subjective Measure of Satisfaction

Our study does not contain data about the individual's subjective experience of satisfactions in leisure or his ethical judgements as to the "value" of a particular type of leisure pastime. A study of leisure time values was undertaken by Havinghurst in 1957 and the technique of factor analysis was used to arrive at dimensions:

A. Masculine Active Escape vs. Feminine Passive Home Centered
B. Upper Middle Class Delightful vs. Lower Class Passive Pleasure
C. Challenging New Experience vs. Apathy
D. Solitary Instrumental Service vs. Gregarious Expressive Pleasure
E. Solitary Expressive Pleasure vs. Gregarious Instrumental Service

As one can see, the dimensions of leisure value extracted are heavily value loaded. Whether these normative judgements are the intended results of the empirical study, or whether they represent the author's interpretative perspective, the dangers implicit in exploring leisure values are clear: there is disagreement on the values of certain types of leisure, and it is not clear that these differences of opinion need be reconciled.*

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*For a more complete discussion of the findings in age and sex subpopulations, see Appendix I.

Our unit of analysis, by contrast, is the Swedish population as a whole, and our method for finding patterns places greatest weight on the combinations of activity that occur most frequently in the whole population. While we will also investigate subpopulations to confirm the generality of our patterns, unusual combinations of leisure activity tend to be averaged out in our calculations. We will return to the problem of normative interpretation in section III. Our perspective will not be based on individual subjective judgement, but normative implications of leisure from the perspective of "the-society-as-a-whole."

A Leisure Pattern is not a Social Network

"One goes to the movies if one's friends go to the movies." The important influence of a person's friends leisure preferences on his own behavior are omitted in our study and thus we must expect an important unexplained component in the patterns we find. On the other hand to the extent that "One chooses friends who like to engage in the same leisure activities as oneself," this omission is less significant. We find evidence in Chapter 5 that while having many friends has a major impact on leisure participation, this effect is relatively independent of job content factors.

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*"In general there was a high degree of relationship of the leisure values with personal adjustment ratings, a moderate degree of relationship with social class, and a low degree of relationship with age and sex" (p. 325). Robert Havinghurst, "The Nature and Values of Meaningful Free Time Activity," in R. Kleemier (ed.), Aging and Leisure.

Relationships to relatives is a measure of strength of traditional kinship ties. In the Swedish data the frequency of visits to relatives does not have a major impact on the frequency of leisure participation, but it does have significant interactive impacts on the relationship between the job content measures and leisure participation.

Elizabeth Bott in Family and Social Network provides the theoretical linkage for leisure time behavior and the structure of social relations. She links differences in the strength of conjugal family bonds vs. strength of outside friendship ties to fundamental differences in the family division of labor. Given different family divisions of labor, free time activities are expected to be performed more within the conjugal family or among outside networks of friends.* Numerous authors have discussed the differences in frequencies of social participation that are dependent on social class.** Litwak*** discusses a different perspective on why different patterns of relationship affect leisure: Friends are more suitable companions for dealing with current fluctuations in external circumstances because they are more likely to be chosen on the basis of common age, sex, job, education, and interest characteristics. The family and relatives are more suited to dealing with issues involving long-term consequence and fundamental resources.

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*Bott, Elizabeth: Family and Social Network, 1956.

**Young and Wilmott, Symmetrical Family, 1973, Family and Kinship in East London. M. Komarovsky, Blue Collar Marriage. See also numerous articles in the American Journal of Sociology and American Sociological Review in the 1950's by Axelrod, Bell, Boat, Force, etc.

***Litwak and Selenyi, "Primary Groups and their Functions." 1969

Yona Ginsberg* in a study of leisure activity in two Tel Aviv communities finds that the preferences for leisure companions varies according to the type of leisure pastime: approximately 90% of the married men in the study attend cultural activities with their wives, while only about 30% visit local cafes with their wives. The latter percentage depends considerably on the social class level of the community, whereas for cultural activities the percentage is constant.

Such studies investigate an important aspect of leisure behavior: the fact that a general type of social relationships may be linked to or responsible for certain combinations of leisure activities. Our findings tend to confirm significant differences in types of leisure activity that are associated with visits to friends vs. those associated with visits to relatives. In general, however, our study does not describe the detailed network of an individual social relations during leisure.

A Leisure Pattern Does Represent a Commonly Occurring Combination of Leisure Activities

Although we have determined what type of data we have available and delimited our method of investigation, several "false" leisure patterns remain. We will discuss these problems in detail in section 3-4:

1. A Leisure Symptom—a combination of leisure activities may actually only appear in a special subpopulation.

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*Ginsberg, Y., "Patterns of Leisure of Young Adults in Two Adjacent Neighborhoods in Tel Aviv," in S.N. Eisenstadt (ed.), Stratification in Israel, 1968.

2. An Omitted Pattern--because of an incomplete list of activities to begin with, the most important correlates for activity "x" may be missing, and as a result a pattern may not appear.
3. A Leisure Outcome--a set of activities may group together only because they are all similarly affected by the same external influence.

Comparative evidence for our leisure patterns is unfortunately sparse. The factor analysis of leisure values by Havinghurst does not really utilize the same type of data as the present study. A Finnish factor analysis of leisure activities performed in 1957 over a smaller but similar random sample of all population groups yileds findings that roughly confirm our results. The list of activities included in the Finnish study is so limited, however, that the two factors which represent the total pattern in that analysis are only two of eight factors developed later in this section.*

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*Piepponen, Paavo, Harrastusten valinta. The study was performed on 427 randomly sampled residents of city of Tampere in 1957 (92% response). A list of activities included: Sociability, Concerts, Literature, Book Reading, and Interest areas in Newspaper Reading: Political, Science, Literature, Theater and Radio Plays (soap opera).

All variables load most highly onto the first unrotated factor with the exception of soap opera indicating a rather homogeneous pattern of activities. After rotation three factors are generated, but two of them are highly correlated. The third has the two variables which do not load more significantly onto the other factors: Soap Opera, Newspaper articles about theater.

These two patterns are similar to our "cosmopolitan-intellectual" and "passive, mass cultural" respectively. Piepponen entitles his dimensions "Self-Development/Social Participation" and "Passive cultural interest."

A recent factor analysis of "alternative evening activities" undertaken by Sveriges Radio illustrates a general difficulty of applying the technique to discover patterns. The time period of analysis is one evening, and correlations investigated are those between the activities listed by the interviewee. An individual who went to a restaurant would not have had time to engage in hobbies, or watch TV. The time budget constraint reduce correlations for all time-consuming activities. The problem is severe because the time period for the analysis is one evening; for our study where the activities engaged in can have taken place over a year's time this problem of "constraint-bias" is probably not significant.

3-3: Data on Leisure Activities

A set of 24 variables measuring leisure pastimes, vacation activity, social and political participation was selected from the Swedish Level of Living Study. 1968. Of these, 19 were measured by single questions in a nineteen activity check list. Respondents were asked "Do you usually do any of the following as leisure time activity" and to classify their response to each activity as "No," "Yes, sometimes," or "Yes, often,"(often defined as at least once a month or more than ten times a year). A series of six questions on recreation travelling and frequency of visits to summer cottages were transformed into indices for travel and cottage visits respectively. Three additional sets of questions assess the degree of participation in unions and political organizations and the frequency of church service attendance.

Most of the nineteen activities are of a kind in which fairly sizable proportions of the adult population engage but the variations in proportions active is also substantial. This variation in the proportions active is interesting in itself but it also has the technical effect of lowering correlation coefficients.

Several of the Swedish terms for leisure activity in the check-list are difficult to translate verbatim, but nevertheless have counterparts in the leisure pastimes of other industrialized countries. The "Reading home magazines" item directly translated means reading weekly magazines (_veckotidningar_). In common usage it refers to magazines featuring serial romances, love stories, human interest stories, articles about movie stars etc., house-keeping and cooking tips etc. Men's magazines of equivalent content and function are also included.

"Dancing" is a translation for a term which implies going out to special dancing halls in smaller communities, to discotheques in cities, or night clubs for older participants. "Window shopping etc." is a translation for "walking about in the streets and visiting shops" and should be approximately similar in meaning.

Table 3- 1: Frequency of Leisure Activity

Sweden 1968 Full population (n = 5923)

Activity	Percentage answering Sometimes	Often	Sum active
1. Fishing	25	10	35
2. Hunting	5	3	8
3. Gardening	24	25	49
4. Movie attendance	36	6	42
5. Visits to the theater, concerts, museums, exhibitions	34	6	40
6. Going to restaurants	33	3	36
7. Dancing	24	8	32
8. Reading books	41	31	72
9. Reading "home magazines"	41	32	73
10. Window shopping, etc.	30	9	39
11. Auto excursions	43	28	71
12. Visits to relatives	59	28	87
13. Visits to friends	61	30	91
14. Have relatives for visits	62	26	88
15. Have friends for visits	63	30	93
16. Participating in study circles or courses	12	7	19
17. Playing a musical instrument	9	5	14
18. Participating in sports	13	13	26
19. Hobby activities (i.e. knitting, sewing, carpentry, stamp collecting, painting)	24	35	59

The other five variables included in the analysis are measured by other techniques than the simple check-list.

20. Political activity index

Non-member	81%
Passive member of political party	5%
Active member of political party	9%
Elected leadership	4%

21. Union activity index

Not a member	55%
Passive member	24%
Active member	11%
Elected leadership	10%

22. Church attendance index

Never visiting services	45%
Attending less than once a month	40%
Attending once a month but not once a week	10%
Attending once a week	5%

23. Summer cottage visits index

No week-end spent in summer cottage	64%
At least one week-end spent in summer cottage (range of values 1-52)	36%

24. Recreation travel index

No recreations travelling done in 1967	48%
Trips in Sweden only	28%
Trips within Nordic countries	11%
Other foreign trips (range of values 5-14)	12%

"Visiting Summer Cottages" has considerable significance in Sweden. The contrast of seasons makes a summertime "close to nature" a more irresistable phenomenon than in countries of a more southern latitude. Rural to urban migration is also a recent phenomenon in many areas of Sweden, and thus, ties to the countryside are stronger than in older urban societies.

Membership in trade union organizations is a more widespread phenomenon than in other industrialized countries: membership is approximately 80 percent of the labor force, representing a wider social class and occupational spectrum than in the United States, for example, where membership hovers around 24 percent of the work force.

We may say in general that the sparseness of the data in the area of relaxation is at least in keeping with our overall goal of describing "active leisure." However, more data on recreation in the home with family members, as well as more detailed information about friends and work companions, would be desirable, and would allow direct testing of hypotheses about "privatized" or socially "passive" leisure participation. The comprehensive data on organizational and political activity completes the picture of leisure time social interaction at the community scale. Data that measure social relationships at either the family or the community scale of political involvement, raise the problem of a different logical level of the analysis. Family relations or political activity may either cause or be caused by the other leisure participation variables.*

It is the correlations between the leisure variables, their covariance, that is of interest in investigating leisure patterns, and we will find that over half of this common variation can be summarized by eight leisure patterns. Much of the total variation in leisure (over 60%) is not explained in this manner, and we must keep in mind that outside influences may play a major role in leisure behavior.

The correlations in T-ble 3-2 are not high (.62 is the highest) and this may indicate either that leisure is truly random behavior or that we have much measurement error. There are several other considerations, however, that may artificially lower the correlations. One source of low correlations may be the "faulty" frequency distributions of the variables themselves. Several activities have a single tailed frequency distribution with most values clustering at zero. This can substantially reduce the magnitude of maximum product-moment correlations.*

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*For a discussion of the implications of including political activity measures in the leisure behavior group, see Chapter 1

There is another reason that correlations may be low: all activities are subject to a time budget constraint. If one goes to the movies, one is precluded from simultaneous activity such as reading a book. This effect could be severe if the time period during which the correlated activities were to have taken place was as short as one evening. For our study where the time period is one year, this bias is probably small.

Some activities such as visiting friends and relatives may be complementary to the other variables, i.e. when they mix with other activities the demand for each component increases. Such compatibility may be reflected in higher correlations than would obtain for the "pure tendency" to engage in the visiting. On the other hand, a reduction in correlations occurs if the activities within a leisure pattern are good substitutes for each other. Going to the movies may satiate some underlying tendency to engage in active social pursuits and reduce the desire for going to a restaurant. Fishing, however, may not be at all equivalent. Since our goal is to investigate these "underlying tendencies" and, thus, groups of leisure substitutes, we must be content with lower correlations.

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*All of the 4 variables with non-zero response frequencies of under 20% (hunting, study circle, music, foreign travel) have communities under .30. However, little variance is also explained on several high frequency variables such as gardening, hobbies and magazines.

Table 3-2 Correlation matrix of 24 leisure activities of Swedish population age 15-75 in 1968

	(1) Fishing	(2) Hunting	(3) Gardening	(4) Movies	(5) Theaters	(6) Restaurant	(7) Dancing	(8) Books	(9) Magazines	(10) Window shop	(11) Auto trips	(12) Visit relatives	(13) Visit friends	(14) Relatives visit	(15) Friends visit	(16) Study circle	(17) Music	(18) Sports	(19) Hobbies	(20) Political activity	(21) Union activity	(22) Church	(23) Cottage
2. Hunting	.35																						
3. Gardening	.12	.10																					
4. Movies	.17	.13	-.04																				
5. Theaters	.11	.12	.11	.36																			
6. Restaurant	.18	.23	.05	.39	.47																		
7. Dancing	.20	.23	-.03	.48	.22	.46																	
8. Books	.13	.12	.09	.23	.41	.26	.13																
9. Magazines	.08	.09	.03	.22	.02	.12	.23	.13															
10. Window shop	.05	.05	.00	.27	.20	.22	.21	.15	.24														
11. Auto trips	.15	.12	.14	.20	.18	.23	.22	.12	.17	.19													
12. Visit rel	.09	.12	.19	.10	.16	.14	.10	.09	.15	.14	.33												
13. Visit friends	.17	.15	.11	.31	.27	.30	.31	.21	.20	.22	.31	.39											
14. Relatives visit	.11	.14	.26	.05	.13	.10	.05	.11	.16	.09	.25	.56	.34										
15. Friends visit	.15	.16	-.14	.24	.25	.28	.25	.21	.20	.16	.26	.33	.62	.48									
16. Study circle	.08	.14	.14	.17	.31	.22	.17	.24	.05	.11	.18	.16	.20	.15	.19								
17. Music	.14	.14	.10	.23	.27	.23	.22	.20	.11	.16	.15	.10	.22	.11	.19	.24							
18. Sports	.23	.15	.06	.31	.27	.27	.31	.20	.08	.13	.14	.09	.22	.09	.19	.24	.25						
19. Hobbies	-.00	.03	.20	.07	.16	.08	.05	.13	.15	.12	.14	.18	.16	.20	.20	.15	.13	.05					
20. Pol act	.03	.05	.06	-.02	.08	.05	.00	.10	-.09	-.05	.02	.03	.02	.03	.03	.16	.03	.04	-.04				
21. Union act	.15	.07	.03	-.02	.07	.05	.02	.05	-.09	-.07	.09	.04	.01	-.01	-.01	.12	-.03	.04	-.12	.18			
22. Church	-.10	-.03	.10	-.13	-.01	-.07	-.14	.02	-.05	-.03	-.00	.06	.05	.05	.04	.09	.10	-.04	.05	.11	-.06		
23. Cottage	.12	.03	.12	.03	.21	.14	.01	.13	-.02	.05	.04	.05	.06	.04	.07	.09	.06	.12	.09	.00	.06	-.05	
24. Travel	.02	-.02	-.02	.17	.27	.21	.10	.19	-.05	.07	.08	.04	.11	-.02	.08	.10	.07	.13	.02	.04	.06	.01	.07

3-4: Factor Analysis of Leisure Activities

a.) The Unrotated Factors

In this analysis we first review the unrotated factor patterns and then look at the Varimax rotated factors. Table 3-3 shows the result of the first approximation of dimensions from the factor analysis. The numbers, "loadings" represent correlation or regression coefficients of each variable with the "unrotated" factors—themselves weighted sums of the original variables best reflecting dimensions of common variation. Unrotated factors are extracted with the strongest central dimension first. The first unrotated factor is thus the best single summary of the variations exhibited in the data.

The most important question for many researchers is the strength of this central dimension: i.e. the "unidimensionality" of the factor pattern. Recent studies of data on "modernization" and "alienation"* tested the unidimensionality of these concepts on the basis of the relative amount of common variance that was explained by the first unrotated factor. If their criterion were adopted in this study (i.e. that 50% of the variance explained by four factors be accounted for by the first unrotated factor), a strong case could be made for the "unidimensionality of leisure." That factor, including the highest loading for visiting friends and engaging in other outside the home entertainments, is the "active-social" leisure in our study and accounts for 52% of the variance of the first seven unrotated factors (footnote next page).

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*Portes, "The factor structure of modernity," A.J. Sociology, July 1973.

Table 3-3 Unrotated factor loadings for 24 leisure time activities in Swedish population age 15-75.*

	1	2	3	4	5	6	7	8
1. Fishing	.31	-.10	.02	-.46	-.06	.08	.15	-.08
2. Hunting	.31	-.06	.02	-.41	-.09	.13	04	.07
3. Gardening	.21	.25	-.25	-.12	-.21	.09	.06	.05
4. Movies	.53	-.36	.21	.09	-.02	-.05	-.04	-.02
5. Theaters	.55	-.27	-.35	.17	-.01	-.09	.08	.04
6. Restaurant	.58	-.34	-.03	-.01	.01	-.12	.03	.17
7. Dancing	.52	-.34	.31	-.10	-.01	-.01	-.11	.11
8. Books	.41	-.17	-.28	.11	-.04	.06	.09	-.18
9. Magazines	.30	.04	.31	.08	-.24	.05	-.02	-.19
10. Window shop	.35	-.09	.15	.19	-.18	-.05	-.06	-.16
11. Auto trips	.45	.11	.03	-.06	-.09	-.16	-.16	-.10
12. Visit relatives	.47	.46	-.02	-.05	-.08	-.24	-.11	.03
13. Visit friends	.67	.19	.14	.08	.24	.09	.02	-.06
14. Relatives visit	.47	.55	-.03	-.06	-.07	-.10	.02	.08
15. Friends visit	.65	.29	.10	.07	.23	.13	.12	-.00
16. Study circle	.39	-.07	-.30	-.02	-.05	.11	-.22	-.05
17. Music	.39	-.12	-.10	.04	-.13	.25	-.12	.06
18. Sports	.42	-.24	-.04	-.11	-.03	.10	-.02	.02
19. Hobbies	.27	.17	-.09	.19	-.27	.09	.07	.01
20. Political act.	.06	-.01	-.28	-.14	.17	.04	-.22	-.06
21. Union activity	.06	-.07	-.21	-.32	.19	-.16	-.09	-.19
22. Church	-.01	.19	-.21	.13	.04	.25	-.22	.08
23. Cottage	.16	-.07	-.24	-.03	-.07	-.05	.28	-.04
24. Travel	.21	-.21	-.19	.15	.15	-.17	.01	.01

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*The factor analysis has also been performed with the sample divided into six separate groups by sex and age to verify the consistency of factor patterns. The proportion of variance explained by the first unrotated factors varies between 37% and 58% in these six age and sex subpopulations.

Percent of variance of first factor vs. common variance of seven factors—unrotated:

		Women	Men
Age:	14-29	53%	58%
	30-54	37%	55%
	55-75	37%	41%

"Unidimensionality" generally higher for men than women and decreasing with age for both sexes. The fact that unrotated factors other than the first, "active-social" factor account for a larger portion of the variance with increasing age means that these outlying clusters of variables become more and more significant—confirming the platitude: general observation that people become more set in their ways as they grow older. See appendix for details.

b. The Final Factor Pattern

Determining the Number of Factors

Theoretically as many independent factors are possible as original variables in the correlation matrix, but the factors diminish rapidly in the total variance they account for. With sociological data it is common that one fourth to one third as many factors as variables will account for over half of the covariance in the correlation matrix.* In our factor analysis the 7th, 8th and 9th factors all have significant eigenvalues.** The decision to retain eight factors was made on the basis of interpretive clarity of the factors.

An important consideration in judging interpretive clarity is reliability of the leisure factors within all divisions of the population. The choice of eight factors yielded factors which appeared consistently in six age and sex subpopulations as well as in the non-rural subpopulation, when independent analyses were performed. Seven of these factors appear with only slight modifications in most of the subpopulations (see p. 320).

Varimax Rotated Factors

Table 3-4 presents the varimax rotated loadings from the whole population factor analysis. In the following subsections the major factors, our leisure patterns, are discussed individually. We will avoid the problem

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*Joreskog, K.G., Statistical Estimation in Factor Analysis, Table 18:1 "Summary of results concerning the number of common factors for 21 different studies," p. 118.

**In a separate factor analysis of the non-rural population these eigenvalues were 1.11, 1.03, .99 respectively.

Table 3-4 Varimax rotated factor loadings for 24 leisure time activities in Swedish population age 15-75

	I	II	III	IV	V	VI	VII	VIII
1. Fish	.08	.06	.14	.08	-.11	.13	-.07	-.54
2. Hunt	.04	.11	.06	-.04	-.02	.18	-.00	-.50
3. Garden	-.03	.30	-.05	-.22	-.20	-.10	.02	-.22
4. Movies	.13	.01	-.02	.05	-.09	.59	-.28	-.07
5. Theaters	.06	.12	.08	-.16	-.52	.47	-.02	.02
6. Restaurant	.07	.12	.03	.01	-.24	.63	-.02	-.13
7. Dancing	.12	.04	-.01	.07	.09	.63	-.18	-.23
8. Books	.11	.03	.10	-.17	-.44	.22	-.16	-.04
9. Magazine	.10	.14	-.17	.03	.05	.12	-.45	-.10
10. Window shop	.04	.11	-.09	-.00	-.09	.26	-.39	.04
11. Auto trips	.05	.39	.13	-.02	-.03	.23	-.24	-.08
12. Visit Rel	.12	.70	.05	-.04	-.03	.07	-.09	-.03
13. Visit Friends	.57	.35	.02	-.09	-.07	.30	-.17	-.07
14. Rel visit	.23	.68	-.06	-.08	-.06	-.02	-.02	-.12
15. Friends visit	.61	.39	-.05	-.10	-.11	.21	-.09	-.11
16. Study Circle	.01	.15	.20	-.37	-.20	.23	-.11	-.10
17. Music	.08	.05	-.06	-.34	-.11	.30	-.13	-.16
18. Sports	.08	.02	.06	-.12	-.15	.38	-.10	-.24
19. Hobbies	.02	.25	-.25	-.20	-.21	.02	-.17	-.01
20. Polit act	.01	.02	.35	-.22	-.03	.02	.09	-.02
21. Union act	-.02	.03	.48	.07	-.08	.00	.05	-.12
22. Church att	.06	.06	.01	-.42	.05	-.11	.08	.11
23. Cottage	.00	.04	-.00	.04	-.40	.03	.03	-.12
24. Travel	.05	.00	.14	.00	-.25	.28	.06	.17

of generalizing prematurely and rely heavily on a simple list of the leisure activities to define the "meaning" of each factor according to the following criteria: activities whose correlation with the factor are less than .25 will be dropped from the discussion. All activities with loadings of over .50, or the highest loading variable on each factor will be used to "name" the factor.

c. Discussion of the Leisure Patterns

1. Visits to Friends	.57
Have Friends for Visit	.61
2. Visit Relatives	.70
Have Relatives for Visit	.68
Gardening	.30
Hobbies	.25
Auto Excursions	.39
Visits to Friends	.35
Have Friends for Visit	.39

While visits to friends and visits to relatives do not appear as separate factors until at least four or five factors are extracted, there are fundamental differences in the other leisure activities that are related to each of them.

Visits with friends are most often associated with the active social pursuits of going to restaurants, movies, dancing, and the "cosmopolitan-intellectual" activities. Visits to relatives, by contrast, have a negative relation to this group of activities. This negative relation is strongest in social class I and least in social class III.

By the sixth stage of factor extraction, visits to friends splits off as a factor independent of even the "social" activities. The variables linked to visits to relatives, such as gardening and auto trips, however, do not separate as an independent pattern, until the visiting relatives variables are removed from the factor analysis.

We will call the first factor visiting friends and the second visiting relatives and related activities.

3. Trade Union Activity	.48
Political Activity	.35
Hobbies	-.25
4. Church Attendance	.42
Study Circle	.37
Music	.34

The factor analysis for the whole population shows a split in organizational activity that is apparent in some degree in all the age and sex grouping. One factor represents a "good citizen" pattern of activity in political organizations and trade unions. It is interesting that engaging in hobbies correlates negatively with this factor, possibly indicating that hobbies have a "privatization" of leisure effect. There is a similar negative correlation between political activity and a factor defined by "home magazine" reading and window shopping in the middle age women's subpopulation. This third factor we label civic activity.*

The fourth factor is the weakest factor and the least stable also when we test for consistency of appearance in the six subpopulations. In an analysis in which membership in temperance organizations was included as a separate variable this loaded most clearly on this factor. We propose to label it religious activity.

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*For a more complete selection of political activities and organizational participation variables see the non-rural factor analysis and the discussion on pp. 37, 42.

From the separate analysis of subpopulations we notice that before age 30 participation in organizations is split among several factors for both young men and young women. Union activity is a completely separate activity before age 30. With advancing age both forms of societal participation appear together as an increasingly consolidated factor among both sexes.

5. Visiting theaters, museums, etc.	.55
Book reading	.44
Travel	.25
Cottage visits	.40

This cosmopolitan-intellectual factor appears in all of the social class, non-rural and age-sex subpopulations, where it is one of the most clearly identifiable leisure patterns. Among young and middle-aged men a related factor labeled "general-intellectual" with less of an upper class-urban bias appears. It has much lower movie, restaurant, foreign travel loadings and higher study circle, music, hobby and gardening loadings.

Incidence of "high cultural" activities is not uniform, but is localized both in social class I and in urban areas.* This interactive effect is so strong that upper class urban men age 30-54 are almost five times as likely to attend theater, museums and concerts as lower class rural men.* When the full set of activities—theater visits, book reading, restaurants, foreign travel (with lower loadings for sports, movie, and cottage visits) —is combined and weighted by their squared loadings, the incidence is 2.5 times as high in social class I as in social class III, with about half of the effect attributable to urban location. Nevertheless, the factor is not a symptom of the social class-urban location interaction.

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*Lundahl, A., Fritid och rekreation, Låginkomstutredningen, Allmänna förlaget, Stockholm 1971; See also Swedner, Harald, Of Fine Culture and Minorities. Almqvist & Wiksell, 1971.

6. Dancing	.63
Visits to restaurants	.63
Movie attendance	.59
Sports	.38
Travel	.28

These variables comprise the strongest factor. These leisure activities are characteristic of urban "night time" entertainment and the highest loadings of this factor occur in the dating age category, 15-29. Unmarried individuals of all ages have much higher frequencies on many of these variables: movie, dancing, sports, but not gardening. In general, the "active social" behavior represented by this factor stands at the core of much active leisure participation and if a single dimension had to be extracted to characterize leisure this would be it. This factor we propose to label active social leisure.

7. "Home magazine" reading	.45
Window shopping	.39
Movie attendance	.28

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*Lundahl, A., ibidem, p. 112.

We have identified a leisure factor whose activities are significantly more common among the "upper" class; is there a comparable factor for social class II or III? The major activities of factor 6 are relatively constant by social class (slightly higher for class I) but there is a subset of these activities, which we will call hereafter "mass cultural," which clearly have higher frequencies in class II and III: magazines, promenades, auto trips, movies. This factor 7 appears in the whole population analysis and the women's middle-age subpopulation. This factor we propose to label passive mass cultural leisure.

A number of activities which occur with high frequency in social class I (restaurants, fine culture, books) also have low loadings on this factor.*

Several studies of "working class" leisure participation have identified a similar grouping of variables. Richard Brown et al. in "The Occupational Culture of the Ship-building Workers" notes that the "most frequently mentioned activities were family centered—visiting relatives and friends, shopping, working on an allotment, gardening, hobbies or car maintenance, family outings."** Steelworkers in the Toulouse area of France report similar leisure habits: trips to country 83 percent, movies 62 percent, fishing 59 percent, gardening 27 percent, dancing 17 percent; with theater and music 24 percent, sports 14 percent, hunting 12 percent.*

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*A more thorough discussion of hypothetical "causes" for this factor is included in Chapter 2A and 4.

**P. 99, R. Brown, P. Brannen, J. Cousins, M. Samphier, "Leisure in Work, The Occupational Culture of Shipbuilding Workers," in Michael Smith (ed.), 1974. Watching television, reading books or magazines, listening to the radio, or doing jobs in the house, doing things with children, were also mentioned.

8. Fishing	.54
Hunting	.50

The factors that represent active physical leisure stand out more independently in the factor analysis than those dealing with social, cultural and intellectual. In the old age subpopulations, however, two distinct patterns of physical activity emerge: one including hunting and fishing that also includes weaker loadings for sports and dancing. Another factor with diminished loadings for hunting and fishing appears among older men and women, and supplements the "active physical" factor for middle age men. It includes fishing, gardening, cottage visits and hobbies. In the non-rural factor analysis, we find that this latter group of activities is associated with voting participation and memebership in non-political, non-religious organization. We call this special sub-pattern the "petit bourgeoise syndrome," and it can also be identified closely with the "visiting relatives and related activity" pattern of factor 2 in the whole population.

The factor with fishing and hunting we call active physical leisure.

d. Resolving the Ambiguous Correlations

The fact that a number of the variables load on several different dimensions makes the task of clear interpretation more difficult. Ambiguities of this type are not surprising, however. It is partly a consequence of the Varimax method of rotation that the pattern of loadings on the factor, instead of the pattern of loadings for the variables, is simplified. From Table 3-4 we notice a number of multiple loadings that are particularly troublesome:

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*Janine Larrue, "Loisirs Ouvriers Chez Matallurgistes Toulousains," Espirit 27 annee, No. 274, Juin 1969, p. 956.

A. Travel loads on two factors.

B. Playing a musical instrument loads on two factors.

C. Participating in a study circle loads on four factors.

D. Going to restaurants loads on two factors.

E. The loadings of cottage visits changes when several variables are deleted.

F. The loadings of the political and union activity variables changes within population subgroups.

G. The loadings of sports activity on the fishing and hunting factor is equivocal.

H. Automobile trips loads significantly on no factor except the social relations factor of visits with relatives.

The first three ambiguities can be resolved by examination of factor analysis from six age and sex subpopulations of the whole sample, and also from a factor analysis of non-rural individuals' leisure patterns (also with age and sex subpopulations). Table 4 (appendix I) shows the loadings for averaged factors from the six age and sex subpopulations of the full adult Swedish sample.*

A. Travel loads most heavily on the factor with fine culture and book reading.

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*In the non-rural population—all age and sex populations—the travel variable loads most heavily again with fine culture and book reading. Playing a musical instrument has low overall correlations, but loads most strongly with fine culture and book reading.

B. Participation in study circles loads most clearly with the political activity variable, and then with the religious activity.

C. Playing a musical instrument appears most frequently with fine culture and book reading.

Two ambiguities remain. For the sake of developing a clear final pattern we will define two factors which include the restaurant variable, but in the case of study circles where the loadings are actually split between three factors with church attendance, two separate political activity factors, and the fine culture-book reading factor—we will arbitrarily place the variable with the fine cultural-book reading factor for reasons of interpretative simplicity. These decisions are incorporated into the final factor table, p.165.

An additional factor analysis in which the social relations variables are removed resolves the question of whether some of the factor loadings are the result of the high common correlations with visits to friends and relatives rather than a result of true internal correlations. When visits to relatives are removed, the factor with gardening, hobbies pickes up cottage visits (along with participation in non-religious, non-political organizations and voting participation). The factor retains a loading for auto excursions but the loading is less significant than with another factor, indicating that it was primarily visits with relatives that auto excursions, gardening and hobbies had in common.

In the total population age 15 to 75, remarkably weak correlations occurred for the union and political activity variables. When additional organizational activities are included, the factors loadings increased as would be expected, but in addition two distinct patterns of participation emerge:

1. A mass participation factor including public demonstrations, union and political party activity.
2. An elite participation factor including attempts to influence public officials, to file a complaint, speaking at meetings, and writing articles.

A final ambiguity is the relationship between sports participation and hunting and fishing. By including both participation in sports activity and membership in sports organizations as separate variables in the non-rural factor analysis, a clearer active physical factor emerges. The loadings for sports and sports organizations (.68 and .60 respectively) are clearly significant, but the hunting-fishing variable (.27) also attains its highest loading on this factor. Again, dancing has the next most significant loading (.19), although it is not included on this factor in the summary table because of considerably stronger loadings on another dimension. The activities: sports, sports organizations, hunting-fishing (and dancing) paint a clear picture of a physical, active-social leisure pattern.

e. Communality of the Variables

The amount of variation by all of the factors included in the leisure activity factor analysis is not high (48% in the non-rural group and less in the whole survey), leaving much of the variation attributable to outside causes. We cannot exclude the possibility that the dimensions that appear in the factor analysis occur because of similiar correlations to an external variable. The amount of total variation of the variables that is accounted for by the factors is called the communality** of the variable, and it is an indication of how much the loadings of a variable on the factors is likely to be affected by unexplained causes.

Table 3-5 shows the communalities of 24 variables from the whole

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*The range of possible variance is indicated by three published articles using factor analyses:

a) Havinghurst, op. cit., performs a factor analysis of 24 leisure "values" (i.e. creativity, relation, etc.) and with 5 factors extracted appears to explain about 17% of the variance.

b) Rummel, R.J., "Dimensions of Conflict Behaviour 1946-59," Journal of Conflict Resolution, Vol. X, No. 1, performs a factor analysis of 23 components of national conflict (i.e. mutinies, coups) and with 3 factors accounts for 64% of the variance.

c) Jansson, C.-G., "Swedish municipalities, a socioecological study of the Swedish municipalities in 1960 and 1965." National Institute of Swedish Building Research, projekt 233. A factor analysis performed on 51 municipality dimensions (referring to area, land, population, mobility, social, economic and political parameters) yields a communality of 77.7 with eight varimax factors.

**In the most common method of factor analysis a variable is said to have much "unique variance" and little attempt is made to adjust the factor pattern to the variance of such a variable. A variable with high correlations to the others is said to have high "communality," and the specific correlations between it and the other variables will have considerable impact on the factor pattern. There are two fundamentally different methods of factor analysis: In the Principal Component solution, all of the variance on the variable is relevant in defining the factors. In the Common Factor method used in this report only the portion of the variation that is attributable to common variation, covariance, is included.

Table 3-5 Percentage of explained variance by variables in a factor analysis of 24 leisure time a tivities in the Swedish population age 15-75 in 1968.

		Men			Women			Additional major sources of variance
	Total	15-29	30-54	55-75	15-29	30-54	55-75	
1. Fish	.35	.38	.27	.31	.31	.25	.15	-
2. Hunt	.29	.33	.26	.20	.62	.27	.74	urban
3. Garden	.23	.27	.27	.21	.34	.22	.28	urban x marital x class
4. Movies	.46	.42	.39	.18	.43	.30	.28	marital
5. Theaters etc	.53	.57	.54	.46	.58	.49	.55	class x urban
6. Restaurants	.46	.50	.50	.27	.53	.51	.60	class x urban, marital
7. Dancing	.50	.46	.43	.16	.39	.43	.73	marital
8. Books	.30	.35	.29	.37	.32	.33	.31	urban x class
9. Magazine	.25	.38	.27	.27	.27	.13	.24	urban x class
10. Window shop	.22	.33	.30	.06	.24	.14	.17	urban, marital
11. Auto trips	.28	.35	.26	.30	.25	.22	.32	-
12. Visit relatives	.51	.53	.50	.52	.58	.52	.46	marital
13. Visit friends	.58	.61	.59	.61	.58	.56	.52	-
14. Relatives visit	.54	.62	.60	.55	.54	.59	.44	marital
15. Friends visit	.60	.65	.66	.64	.57	.58	.48	-
16. Study circle	.30	.33	.41	.24	.32	.28	.27	class
17. Music	.27	.33	.35	.11	.31	.13	.08	urban x class
18. Sports	.26	.30	.26	.16	.31	.07	.11	age x class x marital
19. Hobbies	.23	.24	.24	.22	.24	.19	.23	urban x sex x class
20. Political org.	.18	.10	.25	.30	.11	.16	.21	urban x age x class
21. Trade org.	.22	.24	.17	.17	.20	.12	.20	urban x class
22. Religious org.	.21	.08	.18	.17	.25	.25	.19	N.A.
23. Cottage[1)]	.17	.09	.16	.27	.17	.17	.27	urban
24. Travel	.19	.15	.19	.22	.21	.20	.29	urban x class, marital

1) This variable may be unfortunately incorrectly formulated. It is a summation of two variables with "no answer" for many individuals.

population, age and sex subpopulations, factor analysis after extraction of 7 factors. Variables such as going to restaurants and theaters have much of their variance explained by the factors and appear more stable within the subpopulations. Variables with smaller communalities such as study circles (.30) are less reliable. The fact that urban-rural location is such an important determinant in the leisure activity patterns was the primary reason for excluding the rural population in this analysis of work-leisure associations. The important split for many activities occurs at the small town rural area boundary—there is somewhat less variation according to different scale of urban location. In order to check the stability of the factor pattern, however, a separate factor analysis was performed within the non-rural population.

We can summarize the implications of low communality,* by stating that it may be an indication of any one of the three "false patterns" we cited in the introduction: leisure "symptoms," omitted leisure patterns, or leisure "outcomes."

When a leisure "symptom" occurs, the original correlations (and thus communality) are low overall, but high in a special subpopulation. The result will be a weak or ambiguous factor when the whole population is examined, but a special new pattern will appear within a special subgroup.

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*The inclusion of other political and organizational activities increases the communality of the political party and union activity variables from .26 and .25 to .39 and .27 respectively. Within the male, middle aged subpopulation (eight factors) the added participation variables also attain high loadings: Public demonstrations—.30, attempts to influence—.32, speaking at meetings—.51, written public communications—.38. The political activity factors as a group appear more stable with the addition of the related organizational and political activity variables.

The second problem manifests itself in the absence of significant correlations, and thus insignificant communality. Relevant leisure activities, which may have correlated with the included variable, may have been omitted.

A leisure "outcome" is reflected in correlations and communalities which are artificially increased because of outside factors. As a hypothetical example, we might find a high correlation between magazine reading and back aches. The relationship may be purely spurious, however; that is, reading more magazines may have no effect whatever on the back aches. The fact that they appear together may be due to the fact that they are both "outcomes" of a work environment influence. In our factor analyses within age and sex subpopulations, we notice that the communality of movie attendance drops with increasing age. This suggests that the high communality of going to the movies in the whole population was in part a result of "youthful leisure preferences." Once the stability* of the pattern has been shown in spite of several significant outside factors (in the appendix, age, sex, non-rural location, and social class), one can speak more accurately of possible causal linkages to the leisure pattern as a whole.

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*We have no summary statistic, which explicitly indicates how much of the unexplained variance is due to a group of external causes, as opposed to random variation or measurement error. Janson, C.-G., "Interdependent systems and factor analysis," Quality and Quantity VI (1972), n. 2, p. 285.

3-5 Summary: Final Leisure Patterns

The combination of variables below represents the synthesis of the information from the whole population and non-rural factor analyses, taking into consideration the information from different subpopulations and variables groupsings.* Visiting Friends and Visiting Relatives, separate factors, are removed and in Chapter 5 used as alternative independent variables.

Perhaps it should be stated at this point that factor scores are not the form chosen for tabulating leisure participation in the following analysis. Rather, the factor analysis in Chapter 3 is used as a basis for assigning each leisure variable to one of the leisure patterns in Table 3-6 (such as "restaurants-movies-dancing"). Individual scores for each variable in the cluster are simply added together.** This makes it easier to interpret results than when dealing with the factor score's complex mixture of weighted impacts.

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*There is a difference in overall magnitude of correlations between the whole population and the non-rural population (as well as between age groups). This is remarkable in light of the consistent factors extracted from both the correlation matrices. The observed correlation differences by age group are consistent with a later interpretation (Appendix) that leisure patterns become narrower and less flexible with advancing age, but the lower leisure activity correlations within the urbanized population appear to run counter to common sense. More "differented" leisure which could accompany urbanization, should result in higher correlation or at least sharper differences in correlations. The non-rural factors are at least as clear in terms of simplicity of factor loadings as the whole population factors, but the overall correlations are unexpected and unexplained.

**That is, the factor loading weights are not used. Of course only the highest loading three or four variables on each factor are included in the cluster and the rest are excluded entirely.

Table 3-6: Final Leisure Activity Patterns

"Suburbanite" Leisure

- Cottage visits
- Gardening
- Hobbies
- Other organizations

Mass Political Activity

- Political party activity
- Trade union activity
- Demonstrations

Elite Political Activity

- Personal contact to influence
- Speaking before meetings
- Writing in newspapers, etc.
- Filed complaint with authorities

Religious Organizational Activity

- Church attendance
- Temperance organizations

Intellectual Cosmopolitan Leisure

- Theaters
- Book reading
- Travel
- Study circle
- Playing a musical instrument

Evening Social Leisure

- Movies
- Dancing
- Restaurants

Mass Cultural Leisure

- Home magazines
- Window shopping
- Auto trips

Active Physical Leisure

- Hunting and fishing
- Sports organizations
- Sports participation

Chapter Four

The Job Content - Leisure Behavior Associations

In this chapter we examine the primary findings of the study: the association between the job content dimensions and the leisure activity indicators. Summary of a broad range of statistical results is a significant challenge for the social sciences in general, and it is a particularly difficult problem for the work and leisure findings. We begin the chapter by presenting the relations in their simplest form, but must add complexity as we test the interactive job content model, and add still further complexity when these associations are tested for alternative explanations in Chapter 5.

In order not to be overwhelmed with new "levels" of findings at each stage we must select the "best predictor" or a useful "composite indicator" as a summary measure for each stage of further analysis. This means a loss of generality, and thus we will try to suggest the nature of the overlooked and non-conforming results in footnotes. To begin with in Section4-1: we drop two of the six job content indicators; we convert the leisure activity scales into dichotomous "participation /non-participation variables;" and we relegate all discussion of the "mental strain" component of the job content model to footnotes (using mental strain "symptom/ non-symptom variables").

In Section4-2 we display the univariate associations between job content and leisure activity measures, and use these findings to select one measure each of Job Demands and Job Discretion for further analysis. In Section4-3 we test the interactive Job Content Model ("active, passive, heavy, and leisurely" jobs) and select the one best predictor of job content effects on leisure activity, as well as composite indicators of "active" and "non-active" leisure. Using these "best predictors" and composite indicators we control the job content associations for a variable of additional measures to assess the impact of continuing work experience, individual background, and alternative linkages between the work environment and leisure time behavior in Chapter 5.

4-1 The Leisure "Non-Participation" Indicators (and Mental Strain Symptoms)

In this analysis we will not attempt to predict the worker's level of leisure participation, but only whether or not the worker participates to any significant degree in each leisure and political activity category. Thus we reduce the leisure activity scales--constructed from the variable clusters from the Chapter Three factor analysis--to the simple dichotomous variables shown in Table 4-1. The first reason for choice of the "participate-no participate" simplified scales is that it allows us to begin with the simplest form of the work-leisure question. Also, no significant participation* in any leisure or political activity category during a one year period might be considered a social "problem" and a subject for investigation. Our initial purpose to the study is to investigate the hidden costs of work, and toward this end we selected mental strain symptoms as one type of "problem" (discussed primarily in a later report). The concept of "non-participation" is advanced as an equivalent method for treating leisure activity, although we must be careful not to overstate any normative implications since we have no data on subjective appraisals of "good leisure" or "bad leisure". In addition the distinction between "no-participation" and "some-participation" is really the only non-arbitrary cut point for the activity scale; other points require a decision of "how much leisure is enough." That decision may be more clearly the province of an individual's life style choice.* Fortunately, it is not necessary that the "normative" implication of non-participation be completely agreed upon for the analysis to be useful: the (0,1) variables may be considered merely a truncated form of the leisure activity scales. They also provide a relatively standardized scale for comparing effects across leisure activities (and also mental strain symptoms).

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*In order to facilitate comparisons "at a glance" across measures, there is a correction in the definition of "no significant participation" for Intellectual-Cosmopolitan Leisure. This indicator is made up of twice as many variables (including a vacation scale which is a composite in itself) as other leisure activity factors. Thus "no significant participation" was defined as not more than two activities (one once a year, the other once a month, or equivalent combinations).

The total "variance" in the leisure activity indicators drops significantly when the (0,1) variables are used: in the full male population the coefficient of variability (the standard deviation divided by the mean) drops from .60 using the full activity scales, to .25 using the cutoff frequencies. It happens that the total variation explained by the job content variables is substantially higher when "non-participation" variables are used ($r^2 \approx .6$) than when the full activity scales are used ($r^2 \approx .2$). This relationship suggests that precisely what job content does predict is the tendency to participate at all; other factors may account for the level of participation. The accuracy of prediction in our regression equation also increases because we are attempting to answer a simpler, more "aggregate level" * question: whether the worker participates, not how much (Coleman, 1964).

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*A worker may of course choose to emphasize one leisure life style at the expense of another, and this should not be considered a "problem" (although a low overall level may have socially undesirable consequences; see p. 298). We suggest instead that it become an individual or social problem if the individual fails to participate over the course of a year at all in political activity or in a range of intellectual, physical, social, religious, etc. leisure activities.

The data in the tables that follow and the regression summaries (based on them) are simply the percentages of workers with a particular type of job who do not participate in a particular leisure category. Because these percentages are based on cell sizes of 50 to 300 they can also be interpreted as the rather precise** estimate of the probability that a worker will or will not participate.

An empirical analysis where percentages or probabilities are the dependent variable (Theil 1970, Davis, 1974) has the advantage of standardizing our results. There is the disadvantage that when percentages fall outside the linear range(25%, to 75%) and approach the absolute limits of 0% and 100% distortions may result and must be corrected through use of a "logit analysis"; if percentages differences are to be compared. Fortunately, the "logit" corrections are substantial in only a few cases*** (Variations in Leisure and the Mental

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*Duncan's finding that the income and education level of an occupation can predict 83 percent of the variance in its status score is a similar example. Regressing an individual's income and education on his status score will not give nearly as high an R^2.

**For a discussion of the accuracy of such an estimate, see Appendix 4

***For a more complete discussion see Appendix 4. Distortions can occur with probabilities close to 0% or 100%. This is a problem only when two differences in percentages must be compared. A 2 percent change in the probability at 50 percent (50 to 52 percent) is not as "important" as a 2 percent change at 4 percent (4 to 6 percent). Thus, when the participation probabilities fall outside the linear range (25% to 75%) we transform them into rates of change at midscale (50 percent) so that rates of change will be comparable. To convert from rates back to actual percentages (in these special cases) a transformation scale must be used. (See table A-8). Also for comparative analyses the percentages are weighted by their cell size (as is standard). These weights must also be corrected (for homeoscadasticity) as the probabilities approach 0% or 100%.

Strain variables). In the tables below the uncorrected "raw" frequencies are reported when the tables represent absolute frequencies; "logit-corrected" frequencies are used when differences are compared (see p. 210, 323).

We also drop the double-negative description that can reasily result from the use of "non-participation" variables. Thus, when we state that "participation rates increase as 'X' increases," the reader must be aware that the non-participation figure will actually display the opposite effect.

Our first finding, from Table 4-1, is that engagement in work activity is associated with higher levels of activity during "life outside the job." We can see from the outset that males with jobs have more active leisure and political participation (and fewer mental health problems) than the population as a whole.

Table 4-1: Definition of Leisure "Low Participation" Indicators

Percentages of Individuals with no Activity	Full Pop. (Non-rural) n = 3284	Males With Jobs n = 1466
1. Intellectual Cosmopolitan Leisure:* Books, study circle, fine culture, travel, play instrument, restaurant	34.2	30.2
2. Active Physical Leisure: Play sports, hunt, fish, sports organization	44.7	27.2
3. Evening Social Leisure: Restaurants, movies, dancing	32.9	30.1
4. "Suburbanite" Leisure: Cottage visits, gardening, hobbies, organizations	29.0	35.4
5. Religious Participation: Attendance, membership in church and temperance group	49.8	53.4
6. Mass Cultural Leisure:** "Home" magazines, window shopping, auto trips	48.1	58.0
7. Gladiatorial Political Activity: Meeting, influence, articles, complaints	61.1	45.2
8. Mass Political Activity: Union, political party, demonstrations	61.9	46.0
9. Total Political Activity: Gladiatorial plus mass political activity	45.5	26.1
10. Variations in Leisure Activities: Different leisure activity categories (1-8) engaged in (no more than one category)	29.0	20.1

*This indicator represents the combination of more variables, several of which are also composite. Thus, a respondent had to indicate substantial participation in at least two categories to avoid a "problem."

**Here again, frequencies are very high so a cutting point above unity was chosen.

Mental Strain Indicators: Percentage Reporting at Least one Symptom

Variable clusters from a factor analysis of 20 self-report symptoms of mental strain and psychosomatic illness (p.326)		Males With Jobs n = 1466
1. Depression Problems: Depression, nervousness-anxiety, tranquilizers	23.1	15.2
2. Sleeping Problems: Sleeping problems, pills	13.1	8.0
3. Tiredness: Tiredness in morning, evening, or day	39.7	31.6
4. Aches and Pains: Shoulder and upper back, in hands and arms	39.7	37.4
5. High Blood Pressure-Dizziness: High blood, dizziness	12.5	5.9

4 -2 Univariate Associations

In this section we examine the univariate relations between the job content variable and the leisure "non-participation" measures (a summary of mental strain findings is in the footnotes). These relations are simpler than the predicted multivariate effects from the job content model. We include it to present the least complex and most theoretically "parsimonious" presentation of the basic work-leisure associations. Also, review of these univariate associations in Table 4-2 will allow selection of the particular job demand and job discretion measures to best test the model, later in this chapter. We should note that two of the job content measures discussed in Chapter 2B have already been eliminated. The Physical Job Hazards measure was excluded on the grounds that they were not as likely to affect behavior patterns in leisure (unless they lead to serious illness), and the Institutional Job Status and Protections indicator was excluded because it does not really measure daily experience on the job.

There is confirmation of the overall strength of the work-leisure associations from the canonical correlation coefficient of all the job content and leisure variables. Using the full leisure activity scales and all six of the job content indicators, the magnitude of the first canonical correlate is .69 (first 15 years of work) and .82 (over 15 years experience). A comparable measure of canonical correlation by Kohn and Schooler (1973) for occupational conditions and psychological functioning was .41.*

Aside from indicating the presence of an effect, these coefficients are hard to interpret specifically. Examination of Table 4-2 provides more detailed information about which job content measures display the strongest covariation with leisure. In summary:

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*Their figure is .34 when subjective reactions to the job were excluded and education controlled. Our measure of "b" holding education constant is also (in regular regressions) somewhat lower than the uncontrolled figures - about 78 percent of above values (.54/.64 if corrected).

A. Leisure activity participation increases with increasing psychological job demands (within our very limited range). Thus, there is no "tiredness" effect observed.

B. Leisure activity participation does generally drop for increasing physical job demands, but not for all activity categories.

C. Leisure activity participation generally increases for increased job freedoms, whether measured by schedule freedom at the workplace or intellectual discretion.

The Job Demand Measures

Psychological Job Demands is selected as the job demand indicator for further use in the analysis. The associations of the leisure activity indicators with psychological job demands ($\bar{\lambda}=12.4$) are not only higher on the average than for physical job demands ($\bar{\lambda}=9.9$) but the former indicator is also a better measure of the model of "social-psychological functioning." Indeed, most contemporary studies of job content effects select a psychological stress indicator to associate with mental strain or

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*Truncation of the job content indicators for Table 4-2 and the 9-cell tables
The variables above are truncated forms of the 4 to 6 position variables listed in Chapter 4. The truncated variables define three level scales. These are used for the marginal frequencies in Table 4-2 and the 9 cell tables in Table 4-3 . Format:

1. 2,3,4,5, Physical Job Demands = "High"
2. Job Hectic and Psychological Demands or,(that) plus psychologically Exhausting = High.
3. Job not monotonous and with skill measured as any post-elementary school education, full high school education or university education = "High"
4. Schedule freedom to leave work for half an hour, or (that) plus employer not concerned with schedule= "High"
   "Low" = no phone calls and/or no visitors for 10 minutes

Table 4-2: **Univariate Associations: Job Content—Leisure and Political Activity***
Sweden male (non-rural) 1968; age 18-66; (n=1466)

Marginal "NonParticipation" Distributions (0,1 variables)-%
Job Content variables truncated as noted (p.)

	SUB-URB-ANITE	INTEL.** COSMOP.	EVEN. SOC.	MASS CULT	RELIG. ORGAN.	ACT. PHYS.	ELITE POL.	MASS POL.	TOTAL POL.	VAR. IN LEIS.	POP. W/SUCH JOB CONTENT
IA. Psychological Job Demands											
Lo	43.9	34.4	29.4	55.8	54.9	32.2	58.5	52.8	35.6	24.9	24.3%
	38.6	35.7	31.1	55.0	57.5	25.6	49.2	46.4	29.5	21.8	40.3
Hi	26.1	20.8	29.0	62.9	47.3	25.7	31.1	40.7	15.6	13.9	35.4
Δ =	17.8	13.6	.4	-7.1	7.6	6.5	27.2	12.1	20.0	11.0	$\bar{\Delta}$=12.4
IB. Physical Job Demands											
Lo	29.6	21.0	26.2	63.1	48.7	23.5	36.1	50.8	23.6	13.1	37.8
	35.1	27.4	25.4	60.3	52.9	31.8	49.0	45.1	27.8	20.4	20.1
Hi	40.3	39.7	35.5	56.4	57.6	28.4	51.1	42.4	27.4	25.6	42.0
Δ =	10.7	-18.7	-9.3	6.7	-8.9	-4.9	-15.0	8.4	-3.8	-12.5	$\bar{\Delta}$= 9.9
IIA. Intellectual Job Discretion											
Lo	50.9	41.7	34.2	53.5	62.0	37.5	64.5	43.6	34.2	33.2	12.7
	40.4	40.6	37.2	57.7	56.1	28.5	53.1	43.8	30.2	24.2	45.3
Hi	25.3	15.4	20.8	59.7	47.7	22.8	30.6	49.0	19.1	11.0	42.0
Δ =	25.6	26.3	13.4	-6.2	14.3	14.7	33.9	-5.4	15.1	22.2	$\bar{\Delta}$=16.6
IIB. Personal Schedule Freedom											
Lo	44.6	36.9	37.8	58.4	56.7	29.1	52.4	36.8	25.7	25.3	22.6
	35.4	33.1	26.3	48.4	55.4	29.1	51.9	41.4	28.2	21.6	30.3
Hi	30.4	24.4	27.9	63.9	49.4	24.7	36.2	52.8	24.0	15.7	47.0
Δ =	14.2	12.5	9.9	-5.5	7.3	4.4	16.2	-16.0	1.7	9.6	$\bar{\Delta}$= 9.7

*Full scale correlations (the correlations are much higher for the 0,1 vbls.)

	S.B.	I.C.	E.S.	M.C.	R.O.	A.P.	E.P.	M.P.	T.P.	V.L.	$\bar{r}$
IA.	.15	.12	-.09	-.04	–	-.02	.26	.13	.26	.16	13.7
IB.	-.06	-.21	-.07	.04	–	-11	-.18	.04	-.11	-.17	11.0
IIA.	24	.34	.09	-12	–	16	.39	-10	.25	.21	21.1
IIB.	.08	.18	.17	-.04	–	.07	.17	-.12	.07	.07	10.8

**No significant participation = participation in no more than two of six activities.

psychological functioning and behavior (Kohn and Schooler, 1973; Caplan et al., 1975; Quinn et al., 1971, Frankenhaeser and Rissler, 1970; and--in a non-work context--Seligman, 1975; Maier and Seligman, 1976).

When we examine the psychological demands indicator we find support for both of the major hypotheses of Chapter 2A: as job "challenge" or demands increases, leisure activity level increases (the non-participation frequencies decrease), and mental strain indicators (including "tiredness") increase.* While increasing psychological job demands are associated with greater "tiredness" (under some conditions--see p.197) this condition does not correlate with withdrawal from leisure activity. In the following section we also find that the interactive effect of increased job discretion moderates the "strain" from high job demand. This occurs for psychological job demand but not physical job demands.

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* **Mental Strain Findings**

A. The lowest levels of intellectual discretion are accompanied by mental health problems. Personal freedom displays a weak "U" relation to mental and physical symptoms.

B. Most mental strain symptoms increase with increasing psychological job demands, but measures of aches and pains are only slightly affected. Measure of aches and pains increase for increasing physical job demands, and mental strain symptoms are unaffected.

Sweden: Non-rural Men(n = 1466)

		Tiredness	Sleep Prob.	Depress.	High Blood Pr./Dizzy.	Aches	% of Pop. with job
Psyc. Str.	Lo	21.0	3.6	9.0	4.8	35.8	24.3%
		29.1	6.9	13.9	5.6	37.4	40.3
	Hi	41.5	12.2	21.0	7.1	38.2	35.4
Phys. Str.	Lo	28.4	8.8	14.9	5.6	28.3	37.8
		30.8	7.5	14.9	5.1	35.6	20.1
	Hi	34.7	7.5	15.6	6.7	46.2	42.0
Intl. Disc.	Lo	41.8	10.4	21.4	7.5	39.1	12.7
		30.6	7.5	16.0	7.1	43.6	45.3
	Hi	29.5	7.8	12.5	4.2	30.1	42.0
Schdl. Disc.	Lo	31.1	6.7	15.1	7.0	37.5	22.6
		30.6	6.8	13.1	4.1	37.1	30.3
	Hi	31.8	9.3	16.4	6.5	36.6	47.0
							100.0%

High physical job demands are often associated with less active leisure in Table 4-2, suggesting that physical exertion simply leads to "tiredness,"* and not to the hypothesized higher level of activity outside the job. Furthermore, mental strain symptoms do not substantially increase with increasing physical job demands (see p.175). Thus the hypotheses we advance in Chapter 2A are generally not confirmed when tested with physical demands, although a full test of the job content model would require analysis of more than these univariate results. Of course, our model was not designed to account for the impact of physical job demands, and the "compensation/carry-over" conception does not seem to consistently apply to it, either. A high level of physically exhausting work does not "carry-over" to an active leisure, but leads to a rather hollow "compensation": Low levels of activity after the job and tiredness (see p. 196). Only to this extent is it true that workers compensate in their leisure for conditions at work, but this is obviously represents no positive value in leisure-time pleasure for the blue collar worker. There are two exceptions to this trend: in the first case, workers with very physical jobs do disply limited* "carry-over" or "socialization": active physical leisure is more common for very active physical workers than for workers with moderate levels of physical job demands, and mass political activity (see p. 184) is also more common for workers with physically demanding jobs.*

Job Discretion Measures

The intellectual job discretion measure is selected for use in further computations. Its associations with the leisure participation measures in Table 4-2 are stronger ($\overline{\Delta}$ - 16.7) than for the personal schedule freedom indicator ($\overline{\Delta}$ = 9.7). The intellectual discretion on the job probably is a more fundamental indicator of the worker's control in the work environment than the schedule freedom indicator, which basically measures the individual's freedom to withdraw from the formal tasks of work.

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* The only activity which increases for both psychological and physical job demands.

However, the choice is more difficult than for the job demands selection above. Both measures are theoretically acceptable measures of the worker's ability to either cope with stress or choose self-directed patterns of activity during work.* Measures similar to the Intellectual Job Discretion indicator have been used more often in recent job content studies (Kohn and Schooler, 1973; Gardell, 1971; Hackman and Lawler, 1971, 1975). However, the schedule freedom is the only measure found significantly related to job satisfaction in one major study (Turner and Lawrence, 1965), and manifests important effects in other studies (Young and Willmott, 1973; Kornhauser, 1965; Firth, 195). These last two studies test the importance of schedule freedom on the worker's ability to cope with stress,** (and there are several non-linearities).***

In summary activity levels are consistently higher for both high intellectual job discretion and high schedule freedom. The effects are stronger and more linear**** with intellectual discretion. In addition, Mental strain is generally lower at both high intellectual discretion and schedule freedom -- although the latter indicator displays several "U" shaped relationships.

---

* "Schedule freedom" may not imply equally strong socializing experiences as the restriction of intellectual discretion. Perhaps the worker who, however restricted on the job, could have "practiced" sufficiently in other spheres of his life the use of the personal freedoms measured. Lack of opportunities on the job could not impose a "passivating" pattern on life as a whole.

**The Frankenhaeser and Rissler study (1970) shows that ability to control the process of task accomplishment also affects "strain related" measures (adrenaline secretion) -- see p. 54.

***Particularly obvious is an interaction effect of differences in schedule freedom at high levels of psychological job demands: for tiredness, depression, high blood pressure-dizziness, sleeping problems, there are high levels of symptoms for both high and low schedule freedom, but not intermediate degrees of freedom. This peculiar "dip" in problem level reverses for "headaches."

****The major non-linearities occur for evening social leisure, where non-participation is lowest for the middle range of schedule freedom; and for mass cultural leisure, where a very complex "saddle surface" of participation appears.

Discrepancies and Questions

One problem that arises can only be resolved by controlling the work-leisure associations for social status in Chapter 5. The physical and psychological job demand dimensions might be merely measuring an underlying "social class" dimension of blue-collar, white-collar employment, or perhaps family income differences. We find, for example, that many leisure activities increase in frequency with psychological job demands, by almost the same amount that they decrease in frequency with physical job demands. This suggests that what may really be "causing" the associations observed in Table 4-2 is an underlying "manual labor vs. mental work" dimension.

In fact, there is a negative correlation between the two job demand indicators ($r = -.11$),* but it is not so large that one could be the perfect measure of the lack of the other. Thus, we tentatively conclude that these spheres of behavior are functionally different. A physical "tiredness" can occur simultaneously with a psychological "stress" that is associated with active, demanding leisure. The true test, however, of this independence will be to see whether such job content associations persist when social status measures are included (occupational class, income, wage, education).

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*Also the hectic work variable on the psychological job demand indicator does refer, albeit less strongly, to physical job demands also.

4 -3 Testing the Job Content Model: Job "Activity Level" and "Unresolved Strain"

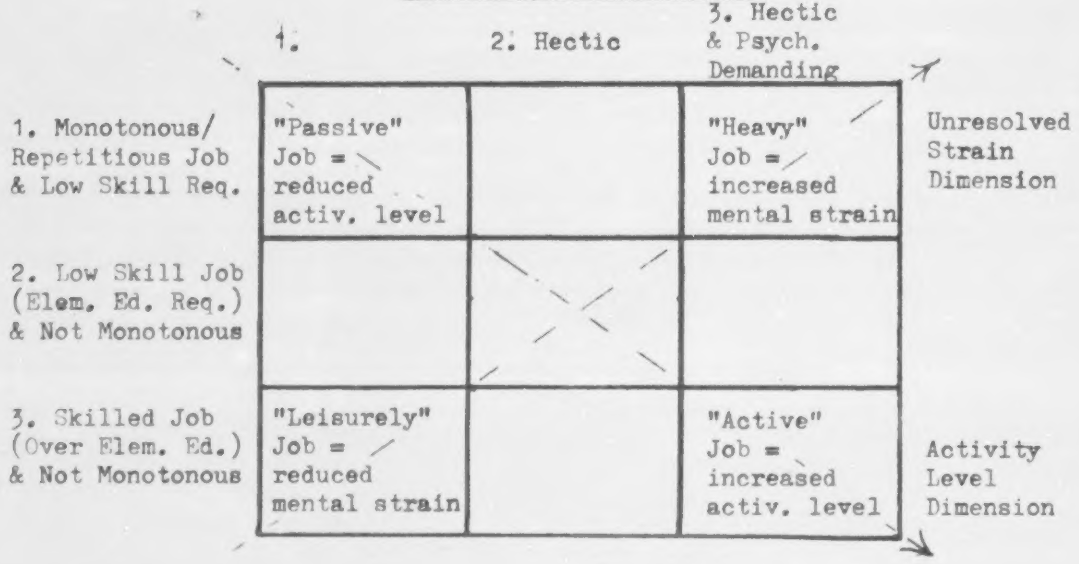
As we recall from Chapter 2A, the literature on the behavioral implications of the demands and discretions present in the work environment could be organized into a small set of relationships:

1. "Heavy" Job: High Job Demands w/Low Job Discretion→→High Strain + (?)
2. "Leisurely" Job: Low Job Demands w/High Job Discretion→→Low Strain
3. "Active Job: High Job Demands w/(?)High Job Discretion→→High Activity Level
4. "Passive" Job: (?)Low Job Demands w/(?)Low Job Discretion→→Low Activity Level

If we neglect the four question markes for the time being* then these four "modified" predictions can be incorporated into the following table (which is expanded from four cells into the nine cell table below):

Diagram 4-1

Psychological Job Demands



	1.	2. Hectic	3. Hectic & Psych. Demanding	
1. Monotonous/ Repetitious Job & Low Skill Req.	"Passive" Job = ↘ reduced activ. level		"Heavy" Job = ↗ increased mental strain	Unresolved Strain Dimension
2. Low Skill Job (Elem. Ed. Req.) & Not Monotonous				
3. Skilled Job (Over Elem. Ed.) & Not Monotonous	"Leisurely" Job = ↗ reduced mental strain		"Active" Job = ↘ increased activ. level	Activity Level Dimension

---

*1. - The "learned helpnessness" contention that strain and passivity may be equivalent; 2.- An additive or multiplicative relation for the 'acttivity level' measure; 3. behavior change under abnormally low stress.

In this two-dimensional array of job content categories, the diagonals most closely approximate the concepts from the models of job content in Chapter 2B: "unresolved strain" and "activity level." The nine-cell tables allow simultaneous control for the effects of psychological job demands, holding intellectual discretion constant, and vice versa. The figures in each cell in Table 4-3 are the non-participation rates in each category of leisure activity. The two-digit number represents the percentage probability that a worker with a particular combination of job demands and job discretion will have a leisure time "problem": defined as a failure to engage significantly in a particular activity (or be subject to a mental strain symptom). The table is thus a three dimensional crosstabulation.

It should be noted that although the nine-cell tables are complex to read, they furnish substantial detailed information. Since the independent variables are Guttman scales, the meaning of each level of the variables can be interpreted (to the accuracy limits noted in Chapter 2B). Thus for "Intellectual, Cosmopolitan Leisure"the probability of non-participation is 50% for those with "passive" jobs, and only 12% for workers with active jobs. But we can be much more specific:

1. The probability of non-participation is 50% for workers whose jobs are:
   a) "monotonous/repetitious, and low skill"
   and
   b) neither hectic, nor psychologically demanding.
2. The probability of non-participation is 12% for workers whose jobs are:
   a) skilled (above elementary school level) and not monotonous/repetitious and
   b) both hectic, and psychologically demanding.*

---

* -or-" psychologically exhausted when coming from work," but this top position of the Guttman scale is included in the "hectic and demanding" level.

Table 4-3: Test of the Job Content Model: Probability of Leisure (Non)-Participation (percent)

Swedish labor force 1968 Males (non-rural) age 18-66 years n = 1466*

Intellectual Job Complexity	Psychological Job Demands: None	Hec-tic	Hectic& Demand.	None	Hec-tic	Hectic& Demand.	None	Hec-tic	Hectic& Demand.	None	Hec-tic	Hectic& Demand.	None	Hec-tic	Hectic& Demand.
Monot./Repetit. & Low Skill	39%	33%	28%	50	43	32	46	39	26	56	51	44	66	61	62
Low Skill (Not Monot.)	27	25	19	41	42	36	33	36	24	43	42	34	52	60	55
High Skill (Over Elem. Ed.)	16	12	9	16	22	12	25	16	27	39	27	19	56	53	42
	VARIA. IN LEIS.			INTELLECTUAL COSMOPOLITAN LEIS.			ACTIVE PHYSICAL LEISURE			SUBURBANITE LEISURE			RELIG. ORGANIZ. LEISURE		

Intellectual Job Complexity	Psychological Job Demands: None	Hec-tic	Hectic& Demand.	None	Hec-tic	Hectic& Demand.	None	Hec-tic	Hectic& Demand.	None	Hec-tic	Hectic Demand	None	Hec-tic	Hectic& Demand.
Monot./Repetit. & Low Skill	34%	33%	36%	58	52	50	75	61	58	48	49	30	17	17	34
Low Skill (Not. Monot.)	36	37	40	58	56	61	63	53	40	52	43	35	7	16	27
High Skill (Over Elem. Ed.)	16	20	23	51	54	66	42	37	23	56	50	45	8	9	16
	EVENING SOCIAL LEISURE			MASS CULTURAL LEISURE			ELITE POLITICAL ACTIVITY			MASS POLITICAL ACTIVITY			DEPRESSION, ANX., TRANQUILLIZERS (symptom level)		

*Cell sizes listed on page 186. Marginal frequencies listed in Table 4-2., For detailed frequencies see p. 327

The tables also allow us to observe that the association of Elite Political Participation with Intellectual Discretion is stronger (non-participation drops 35 percent) than with Psychological Job Demands (non-participation drops 12 percent)--see Table 4-4. In addition, there is an interaction effect: changes in psychological job demands show sharper changes in participation at low intellectual discretion.

Several Findings

We can see that the basic pattern in leisure participation revealed by Table 4-3 is that participation in leisure and political activity increase along the "active - passive" diagonal--noted with a diagonal dotted lines (Table 4-3).

The most comprehensive "measure" of leisure behavior is the Variety of Leisure indicator. (No more than one category of leisure is defined as a leisure "variety" problem.) The table shows that variety in leisure behavior is clearly associated with higher freedom on the job and higher levels of psychological job demands. While only 9 percent of workers with "active" jobs fail to engage in more than one activity category, 39 percent with "passive" jobs have such restricted leisure behavior. Substantially the same result occurs when either intellectual discretion or schedule freedom at the workplace are combined with psychological job demands.

There are several important exceptions and additions to this basic picture of active jobs-active lesire. Non-participation in mass cultural leisure is higher for workers with more active jobs. That is, workers with passive jobs are more likely to select the leisure activities like home/ adventure magazine reading and window shopping.* Participation in evening

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*Auto trips is initially included in the leisure pattern because it was the "best fit" of several ambiguous options indicated in the factor analysis. However, further analysis using a Mass Cultural Leisure indicator without auto trips displays stronger associations with the job content dimentions:
1. Original (full scale, working men and women): r = .09/-.09
2. Minus auto trips (full scale, working men and women): r = -.12/-.13

social leisure is predicted better by the intellectual discretion by itself than by the active-passive diagonal ("activity level").

Elite and Mass Political Participation

The strongest relationship between any of the activity indicators and the stress-discretion models of the work environment occurs for elite political activity. Over three times as many individuals with active jobs engage in at least one of the elite political behavior indicators vs. those with passive jobs. The effect is somewhat stronger for those whose jobs are "monotonous/repetitions, low skill, and not hectic" (75% low participation vs. 23%) than those whose jobs do not allow the schedule freedom "to accept a visitor for 10 minutes on the job and not hectic" (65% vs. 25%). In either case, the vast majority of workers who fit the "passive" work environment model—low job demands and low job discretion—are non-participators in this personally engaging and personally directable form of political activity.

Thus there appears to be a definite carryover of work environment behavior to participation in the societal decision making processes, particularly in the area of individually manifest "personal influence" or

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*Auto trips is initially included in the leisure pattern because it was the "best fit" of several ambiguous options indicated in the factor analysis. However, further analysis using a Mass Cultural Leisure indicator without auto trips displays stronger associations with the job content dimensions:
1. Original (full scale, working men & women): r = -.09/-.09
2. Minus auto trips (full scale, working men & women): r = -.12/-.13

attempts to influence socially relevant issues which affect the respondnet's own life situation. We find in Chapter 5 that the active-passive work dimension is highly correlated with social status variables such as class, family income and education (Verba and Nie, 1972), and, thus, effects of these factors must be partialled out before we can reach a firm conclusion here.

A finding of major significance is that elite political activity shows little variation between "heavy jobs" and "leisure jobs." By contrast, for Mass Political Activity it is just this dimension of "unreasolved strain" that is the cricial one: workers with "heavy jobs (i.e., "oppressed" workers) are the active participants. For elite political participation, not only is the active group different, but the dimension which defines the highest levels of engagement differs.

The job content model of the work environment, as measured by either physical or psychological demands,* shows a strong association with Mass Political Activity. Participation in demonstrations, activity in trade unions, and political parties are more likely among those with both physically and psychologically demanding jobs, portions of the industrial working class, than those without. Examination of the job discretion relationships shows a result, however, that is contrary to our general hypothesis, and contrary to the findings for all other activity indicators.

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*Physical demands are associated only with mass, and not elite, political participation, which suggests that the physical demands effect may be an artifact of social class colinearity. Even among the working class where mass political participation is highest, it is the special group with psychological strain on the job which is most active.

It is workers with the least discretion at the workplace who are most active. This finding suggests that mass political activity is, in every way, a "protest reaction." Workers with the most demanding and restrictive jobs are most active in the political organizations, which, in Sweden, have as their goal improvement of working class conditions. We cannot say, therefore, that the "socialization" process which can account for many of our other activity patterns applies universally. A "protest" mechanism appears to function for mass political activity.* However, in the U.S. studies of political behavior suggest that the same phenomenon does not apply (Verba and Nie).**

The "Best Predictor": A Summary Measure of Job Content

While these detailed analyses provide insight into exactly what level of each job content indicator is more relevant to participation changes, analysis is tedious. To summarize the multi-cell tables requires that we select one set of independent variables from several available. We can choose between the empirically derived job demand and job discretion variable, or the transformed variable predicted by the job content model (Demand + Discretion; Demands - Discretion). We will test both pairs in Table 4-4 and determine which is most successful in simply describing the table variations.

**Verba and Nie, op. cit., pp.159,340. There is no evidence in the U.S. of a political participation tendency of the same type(cross-cutting social status in general). However, a similiar phenomenon is noted for blacks: "black consciousness" accounts for a independent increase in political participation.

We use multivariate linear regressions with each pair of variables.* The percentages in each cell are the dependent variables, and each cell is weighted according to the cell population frequency** (see Appendix 4). We compute rates of change (b_x), correlations (r, r_2), and the "full scale" variations ($b_x \cdot x$) which allows us to compare the total probability changes that are predicted by each variable ("logit-corretcted" see p. 210 , 323).

Table 4-4 summarizes the variation explained in leisure participation by four job content measures: Psychological Job Demands, Intellectual Job Discretion, the "Unresolved Strain" composite, and the "Activity Level"

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*A third choice would be the interaction effects which we do not investigate in detail:

a. The impact of intellectual job discretion at high levels of psychological demands. This is important for full-time working women's leisure, and the effects of schedule freedom on mental strain.
b. The impact of psychological job demands at high levels of intellectual discretion. This is important for evening social leisure, and some effects of physical job demands on leisure participation. There is also a change at low levels of intellectual discretion, an especially important interaction for "sleeping problems," and several schedule freedom relationships.

**The actual cell weights for Table 4-3 are as follows in order of Table 4-3 cells. The approximate weights used eliminate most of the error that would be introduced by an unweighted analysis, but more exact weighting trials show that the approximate weights still leave a margin for error of 2 to 4 percent in the coefficients in Table 4-4. Actuals weight also depend on percentage level beyond a linear range(.25 to .75) see appendix A4.

n	Actual/ %	Weighted %	n	Actual/ %	Weighted %	n	Actual/ %	Weighted %
52	.035	(.053)	84	.057	(.053)	50	.034	(.053)
194	.132	(.105)	316	.216	(.210)	154	.105	(.105)
110	.075	(.105)	191	.130	(,105)	314	.214	(.210)

TOTAL 1466 1.00 1.00

Table 4-4: Best Predictors of Leisure "Non-Participation"

$b_x \cdot x$ is the total scale variation in non-participation predicted at 50th %-ile (p.323) and r^2 is the variance explained (independently) for each variable.*

	Ave. Non-Part. Level	Original Dimensions				Transformed Dimensions			
		Psych. Demands		Intel. Discretion		Activity Level		Unresolved Strain	
		$b_x \cdot x$	r^2	$b_x \cdot x$	r^2	$b_x \cdot x$	r^2	$b_x \cdot x$	r^2
I. Leisure Variety**	20%	-13.8%	.24	-33.0%	.85	-44.8%	.85	19.2%	.08
II. Intell. Cosmop. Leis.	30%	-11.7	.13	-35.1	.73	-46.8	.63	23.4	.10
II. Active Phys. Leisure	27%	-5.7	.12	-13.8	.45	-19.5	.44	8.1	.04
II. Suburbanite Leisure	35%	-16.8	.40	-25.1	.68	-41.9	.92	8.2	.00
II. Evening Social Leisure	30%	3.9	.01	-21.4	.61	-15.3	.19	25.3	.40
II. Religious Organ. Leisure	54%	-6.8	.22	-14.2	.56	-21.0	.63	7.4	.03
III. Mass Cultural Leis.	58%	3.4	.22	8.3	.33	11.4	.47	-2.5	.00
IV. Elite Political Act.	45%	-22.3	.41	-33.9	.69	-56.2	.94	11.6	.01
V. Mass Political Act.	46%	-14.0	.56	9.8	.17	-4.1	.07	-23.8	.80
Best Predictor of Leisure: (of Each Job Content Pair)									
Average $b_x.x$		22.1%				32.3%			
Average r^2		.61				.68			

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*r^2 is calculated on the basis of using each variable by itself, as the predictor of the leisure variables. The b_x's represent each variable's contribution when the "pair" (original, transformed) is used jointly to predict leisure $y = {}_o + b_1 x_1 + b_2 x_2$. The transformed dimensions have 4 unit scales (1 to 5) and the original dimensions 2 unit scales (1 to 3).

**recall "logit-correction" comments p. 210.

composite. The finding is that the measure of Active vs. Passive activity level on the job is the best prediction of leisure participation (average $r^2 = .68$). Intellectual job discretion alone is a close second choice (average $r^2 = .61$) and in fact is a best predictor of the evening social leisure. We note also that mass political activity is predicted by high "unresolved strain"* from work, rather than the active-passive character of the job. This dimension is also the best predictor of depression and other mental strain indicators.* The low r^2 for unresolved strain (except for mass political activity) show that leisure activity in general is relatively unaffected by strain.**

Several technical points with theoretical implications must be raised. First, psychological job demands and intellectual job discretion are correlated (r = .22),*** not highly, but large enough that some of the variation reported for intellectual job discretion could really be the spurious effect of job demands. One solution to this indeterminacy is to define an aggregated measure, where these separate contributions need not be iso-

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*"Best indicator" of mental strain ($b_x \cdot x$ for symptom probability- at 50 %ile)

	Psyc. Dem.	Int. Disc.	Act. Lev.	Unr. Strain
a) Depression, Anxiety, Tranquil.	29.6	-22.6	6.9	52.2
b) Tiredness	27.2	-18.9	8.4	46.1
c) Sleep. Probs.	32.8	-13.7	19.0	46.5
d) Aches & Pains	4.7	-14.2	-9.6	18.9
e) Hi Blood. & Dizzy	13.3	-30.0	-12.2	41.6
Average $b_x \cdot x$	27.0%		41.1%	

("logit"-corrections must be used for level prediction)

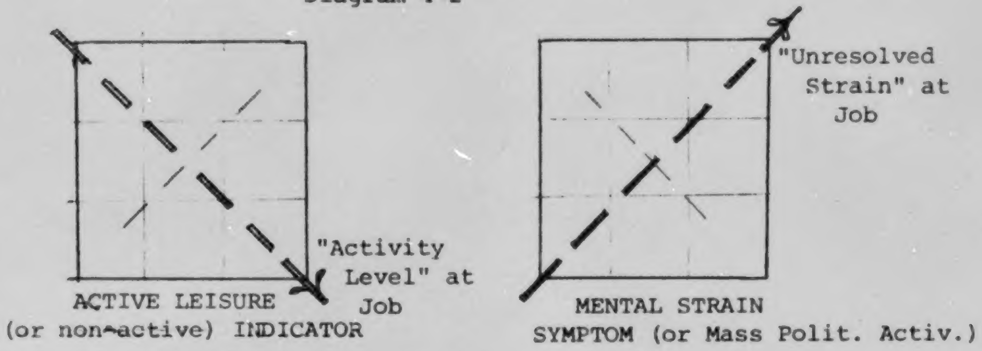
**If we sum the total effects due to the unresolved strain, however, job strain generally reduces participation (nonparticipation up 8%) except for mass political activity.

***The correlation between job demand-job discretion pairs is: psychological demands-intellectual discretion, r = .22; psychological demands-schedule freedom, r = .07; physical demands-intellectual discretion, r = -.33; and physical demands-schedule freedom, r = -.14.

lated("spurious" contributions are internal to the measure)*** Our activity level measure meets this requirement.

One important finding is that the transformed dimensions—demands + discretion, demands - discretion—allow a minimax of variance on the leisure participation and mental strain indicators simultaneously (p.187,188ff.) By transforming the variables in the manner predicted by the theory in Chapter 2B we simplify the explanation of both leisure and strain simultaneously. This allows our story to be told more clearly:

Diagram 4-2



The figures in Table 4-4 made use of an estimate of "activity level" and "mental strain" which are simply the diagonals of the nine-celled table: i.e. the coefficients for both the psychological job demands and intellectual discretion are 1.0, since our theory implied no more precise specification. The coefficients which best predict leisure activity level can be determined by use of a multivariate linear regression on a composite leisure participation measure(p.192)The resulting coefficients are somewhat

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***Of course, "demand minus discretion"—the unresolved strain measure—suffers just where activity level benefits. Small variations may be of indeterminate sign, an increased error is introduced. Fortunately the composite indicator still appears to be a quite successful predictor.

indeterminate because of the multicolinearity, but the intellectual discretion coefficient is clearly higher than that for psychological job demands. For personal schedule freedom the coefficients are more nearly equal:

$$(-)\ \text{Leisure Participation (composite)} = L_0 + 9.7 \times \text{Intell. Discr.} + 3.7 \times \text{Psyc. Demands}$$

$$\text{"} \quad \text{"} = L_0 + 5.6 \times \text{Sched. Free.} + 4.8 \times \text{Psyc. Demands}$$

Thus, our simply conceived diagonals should ideally be rotated. However, we retain as "best predictor" the measure based on the diagonal (1.0 + 1.0) for computational simplicity in the calculations below. Although it misses an extra bit of variance but it is easier to interpret unit changes of job content (and the weights are similiar with schedule freedom).

This simple scale of active vs. passive job content (the "activity level indicator") is computed by adding the level of psychological job demands (1 to 3) to the level of intellectual job discretion (1 to 3). The resulting interval scale is used throughout Chapter 5 as the summary measure of job content to which effects of other variables are compared: income, friend visits, etc. The parameter (b_x)* is the change in probability of leisure participation with a unit change along the activity level scale. Such a unit increase could come from an increase either in Intellectual Discretion or Psychological Job Demands.

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* The parameter (Se) is the standard error of the regression. Since the full scale variation along the activity level is 4 units, a value of (Se) less than b_x indicates that the regression line is a fairly close fit to the values in the multi-cell tables (confidence level = .0001 that participation is higher for active jobs, etc.).

Summary Leisure Participation Measures

Table 4-4 shows that most of the leisure activity indicators display a roughly similar type of association with job content. To simplify further analyses a composite of the active leisure measures will be formed from these indicators.

If activity indicators are ranked on the basis of the difference in participation rates explained for active and passive jobs, we find that at the top of the scale are activities such as "speaking at meetings, sending in articles or complaints," and the intellectual, cosmopolitan group of leisure activities. At the bottom end of the scale--negatively correlated--are mass cultural activities, such as home magazine reading and window shopping.

We might call this the Scale of Active Leisure. It displays a rather consistent quality. At the top end are activities which demand willful and judgemental decision making on behalf of the participant. At the lower end of the scale we find some activities which reflect almost random disposition of energy by the participant: magazine reading and window shopping are the best examples of such non-choice behavior patterns. (Auto excursions--also included--may be either random or quite goal oriented.) Mass political activity must be considered the exception.*

---

*Mass Political Participation must be considered an exception here. Most of its component activities could be said to require considerable energy and discretion. High participation is correlated with hectic and psychologically demanding work. Also unique for this indicator is the fact that the Heavy Job-Leisurely Job dimension is a much more effective discriminator. It is behavior representing the "reaction of the oppressed."

Table 4-5: SCALE OF "ACTIVE LEISURE" BEHAVIOR

		$b_x \cdot x$ (at 50 %-tile) change in leisure by job "activity level"	r^2 explained variation by "activity level"
	Elite Political Activity	56%	.94
ACTIVE LEISURE COMPOSITE	Intellectual, Cosmopolitam	47%	.63
	"Suburbanite" Leisure	42%	.92
	Religious Organiz. Partic.	21%	.63
	Active Physical Leisure	20%	.44
	Evening Social Leisure	15%	.19
	Mass Cultural Leisure	-11%	.47
	Mass Politcal Activity	4% (24%)	.07 (.80)
	Variations in Leisure	45%	.85

The scale of leisure activities developed may also reflect the "energy" consumed by the activity, although this is certainly debatable and not measured by our data. Just like work,* some of the top end activities—travel, meetings, study circles—can be exhausting, although the energy expended is modulated by the individual at all times and can as easily be "excitement" as exhaustion. This finding is consistent with earlier evidence that a definition of "active" leisure could utilize the same dimensions of action as work (at least "active" work). Active leisure is demanding in terms of human resources, is goal oriented, and requires the use of individual discretion. In short, the activities that associate most strongly with "active" work (demanding and discretionary) are similarly "active" pursuits. Mass Cultural Leisure, on the other hand, does not show a positive association with active work.

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*We recall the same role-definition dimensions that describe active jobs have been used in the political participation literature to categorize that type of "active" leisure participation as well (see Chapter 1, p.29). The active political participant was "psychologically involved" in activities which demand much energy and use of time (Milbrath, op. cit.; Lewin, op. cit.). He also manifested the use of skills and individual decision making to guide the direction of his activity. The measure of his social integration in the community was also a relevant but complex dimension for that model of political activity.

A study of leisure activities by Young and Wilmot the categories of after-work behavior that are described in their questionnaire responses as most "work-line in character" are at the top of the leisure activity table above.

4-4 General Conclusions

a.) Compensation and Carry-Over. By redefining our problem in terms of "activity level" and "unresolved strain" we have dismissed the more familiar discussion of "compensation" and "carryover." We considered these categories far to unspecific to guide the formulation of a research question. However, since they raised a compelling social policy issue, we return to them. Does life outside the job represent a "compensating factor" which somehow equalizes the benefits of work across population groups; or does the occupation system display a "double inequity" when the effects of the job "carrying over" into leisure are also considered?

To describe our empirical results we must rigorously postulate* that a "carryover" finding is one where dimensions of work activity are similar to dimensions of leisure activity, and "compensation" occurs when these characteristics are dissimilar. Some mental strain symptoms are likely candidates to breed confusion. For example, it is always assumed that the worker "compensates" for an active day by sleeping at night. Thus on an individual level "tiredness" might be considered evidence of a compensation process. In our research, however, the question is always formulated in terms of relative levels of the leisure problems between different job content categories. If a worker with a demanding job is more active or more tired(both strain correlated) than one without, the process of "carry-over" is occuring.

In general there is little evidence that deficiencies in the work environment are compensated for by choice of leisure activity (or state of mental health) when the relative participation rates are examined for different groups of workers. The evidence is just the reverse: the distribution of outside-the-job costs and benefits (summarized in Table 4-6) of work generally reinforces the existing inequalities in the occupational system represented by wages, income, and social status. We confirm Meissner's (1971) finding that the "Long Arm of the Job" stretches out to leisure activity and mental health (see also Parker, 1971; Torbert, 1973). Workers with high incomes and wages are also the ones with "active" or "strain free" leisure. The correlations of income and wage with the variables in the Active Leisure [illegible] are so strong that indeed we must ask (as we do in Chapter 5-5) whether income, class, education "cause" these associations. Since we find that they are not (at least substantially) we conclude that much of what is considered social class may be attributable, not only to the already well documented effects of income and education, but to behavior patterns that are learned at work, and the state of "strain" of the working individual when he leaves his job. We can paint a more detailed picture than the unidimensional status indicators, since we find multiple patterns of job related "costs" at the lower end of the job spectrum.

Table 4-6 is based on the "best predictors" (Psychological Job Demands and Intellectual Job Discretion) but the specific findings depend on the job content dimensions. When we measure "active" and "passive" jobs with

Table 4-6: Summary of Work-Leisure Correlates for the Four "Prototypical" Job Types (%)

These four cells represent the extremes of the 9-cell diagram (p. 179) and about 40% of the work force.

Sweden, male workers (non-rural) 1968, age 18-66 (n = 1466)

Job Content Categories	Average	Heavy	Passive	Active	Leisurely
Low Activity level:					
Variations in Leisure	20 %	28 %	39 %	9 %	16 %
Active Leisure:					
Intellec. Cosmopol'n.	30%	32	50	12	16
Suburbanite Leisure	35	44	56	19	39
Active Physical	27	26	46	27	25
Active Social	30	36	34	23	16
Religious Participation	53	62	66	41	56
Mass Cultural Leisure	58	50	58	66	54
Mass Political Activity	46	30	48	45	56
Elite Political Activity	45	58	75	23	42
(Total Polit. Activity)	26	24	37	13	28
High symptom level:					
Tiredness	32	64	33	36	19
Sleeping Problems	8	20	2	11	5
Depression	15	34	17	16	8
High Blood Pr.-Dizziness	6	14	12	4	4
Aches and Pains	37	44	40	31	31

these predictors (or Schedule Discretion), higher "activity levels" on the job are associated with more active leisure and political participation. Workers with "passive" jobs participate less in these activities, but have higher participation in the "non-active" leisure. The effects of Physical Job Demands on leisure activity are generally opposite those for Psychological Job Demands.* According to our rigorous definition, Physical Job Demands imply "compensation," while all other job content dimensions, and their composites, show evidence of "carry-over" of behavior from work to leisure. The label is misleading,** however. What it means is that workers with physically demanding jobs have less "demanding" leisure: they may be physically exhausted—hardly a valuable compensation. Furthermore, there is a slight suggestion of a higher level of Active Physical Leisure for the most physically taxed workers—again carry-over evidence.

To confirm "carry-over" with the original job content diemsnions is more difficult. It creates problems of categorizing "types" of leisure behavior that we avoid with the definition of job "activity level." Nevertheless, leisure activity categories that would appear to require high levels of "personal competence and skill" (such as Active Physical Leisure, Intellectual Cosmopolitan Leisure, Elite Political Activity) are associated with higher levels of Intellectual Discretion and Schedule Freedom at work. In Table 4-4, leisure activities that would appear to be associated with high levels of "psychological engagement or challenge" are also higher for workers with psychologically demanding jobs (Variety in Leisure, Mass and Elite Political Activity).* Thus, there is evidence for "carry-over" with both the empirically derived job content dimensions and the "job content" constructed dimensions.

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*Mental Strain: Summary

Mental strain increases with Psychological but not Physical Job Demands. Intellectual Job Discretion clearly modulates this effect: individuals with high Intellectual Discretion have fewer strain symptoms at high stress than workers with low discretion. The Schedule Freedom measure displays a more complex result: some evidence exists for increased problems among highly stressed workers with the highest levels of personal freedom, as well as at the lowest, although at the most aggregated level these two discretion measures have similar results: high discretion, low strain.

**In common usage "carry-over" might mean that some burden of work led to a problem outside of work even though the undesirable characteristics in each situation are entirely different (such as physically exhausting work "carries over" to low leisure activity). Another difficulty is that in common usage the term "compensation" could hardly be applied to a work environment where substantial tiredness was the outcome regardless of the description of the job.

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*However, "Suburbanite" Leisure is also highly correlated with Psychological Job Demands.

b. What is the Mechanism of "Social-Psychological Functioning?"

We subdivided the original question of the impact of work on life outside the job into two types of effects: the "activity level" at work (measuring the difference between Active Jobs and Bassive Jobs) was hypothesized to effect level of participation in active leisure and political behavior. Secondly, unresolved strain from work was hypothesized to lead to mental strain symptoms.

Our first finding relates to this overall model and thus must also address questions of mental strain. We find that for the working male population mental strain symptoms and leisure activity participation are almost completely uncorrelated.* While this finding runs somewhat contrary to common sense it is indeed the result we might expect if mental strain and changes in the individual's activity level were generated by independent mechanisms of "social psychological functioning, and if the work environment were a significant determinant of this full range of behavior. Our finding is that, by transforming the psychological job demand and intellectual job discretion measures into the "demand + discretion" and "demand - discretion" (which are mathematically independent) composites that the variation in both symptom levels and leisure behavior is

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*Correlations: Full sample (excluding self-employed and agriculture, n=1150)

Leisure	variat. leis.	intell. cosm.	actv. phys.	even. soc.	suburb. leis.	mass cult	elite polit.	mass polit.
Strain								
Tiredness	.04	.04	.03	.09	.-02	.07	.03	.03
Sleep Prob.	.07	.04	.01	.01	.01	.09	.05	.-06
Depression	.06	.04	.-03	.-01	.00	.-01	.04	.00
Aches	.-04	.-12	.-08	.-16	.04	.-04	.02	.03

Average = +.008

"optimally"* accounted for. Thus, we do not find that both depression and a passive life style are closely associated as Seligman (1975) and Guttentag (1975) suggest.** Both findings lend indirect support to our concept of a model of social-psychological functioning. However, since we do not directly measure "unresolved strain" or "activity level" at work our findings about these constructs as psychological processes are only suggestive.

a. At minimum we can state that both the job demand and the job discretion terms have independent effects. Neither the activity nor the strain observations can be accounted for as the effect of one dimension and its "spurious" correlations through the second variable.*** Both variables make significant separate (but unequal) contributions—additive or subtractive****—as predicted by the model. Leisure participation is more strongly associated with the job discretion variables, while mental strain is more strongly related to Psychological Job Demands.

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*We recall that 67% is accounted for only when simple dichotomous variables are used. When the full scales are used the prediction is much less successful: $r^2 = .10$ to .30. Also transformed scales are not quite the optimal combinations.

**However, we measure only a specific type of mental strain (related to anxiety, worry and tranquillizer consumption) as depression; possibly other definitions of the broad conception of depression, emphasizing a withdrawal from active behavior styles, would yield such a relationship.

***$r_{psyc} = .22$ (intellectual), .07 (schedule).

****We cannot determine whether "activity level" is additive or multiplicative. First, our data is not sufficiently precise. Secondly, we have no measure of a "zero point" for job demands which might be important for "stress" through boredom (Franklenhaeuser and Rissler, 1971). Mass Cultural Leisure shows a possibly multiplicative relationship.

We can certainly reject the existence of a "peaked curve" of optimal response; but this may be due to lack of measurements at very high and very low job demands. Schedule demands display an interactive "U" shaped effect, where activity peaks in the middle.

b. We have not tested an analysis of variance model to see whether the interaction term is mathematically significant—independent of the additive effects. Rather than perform such calculations we have presented the nine-cell tables, where interactions can be detected easily by inspection. Beyond this, we have found that the interaction terms are the best single predictors of the associations* and use them in all future analysis. The most obvious examples of true interactive effects occur outside the boundaries of our restricted leisure activity analysis (for mental strain, for women's leisure,** and for the Schedule Freedom measure). There is irregular evidence that "passivity" from the job is more strongly related to lack of challenging work at lower levels of job discretion. Taken together with the strong (often interactive) mental strain findings*** we confirm Wilensky's (1960) examples of dual disadvantaged populations at the bottom of the occupational hierarchy (at least the job discretion hierarchy):

1) The "strained" auto worker who races his car home, belts down a beer, comes home to beat his wife, and throws rocks at his neighbors.

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*The better question might be (Blailock, 1960) whether the original dimensions add significantly to the prediction after the "main effects" from the transformed variables.

**Full-time women workers display an interaction for leisure activity (p.246): only when their jobs are very demanding does job discretion associate with active or passive leisure. As Seligman (1975) suggests, among highly stressed individuals, low job discretion may lead to both passivity and depression. If the job is not demanding perhaps responsibilities at home are more salient.

***For example, high job demands are much more likely to lead to sleeping problems at low discretion (20% vs. 2%) than at high Intellectual Job Discretion (11% vs. 5%). This suggests that the worker with more freedom on the job is better able to cope with overly heavy job demands (as well as the problem of too little to do).

2) The "passive" worker in the huge processing industry or administrative bureacuracy who turns on the T.V. after work, and thereafter isolates himself from all further societal participation.

c. We cannot really ascertain what processes are at work to "cause" the associations between work and leisure. Time series data would help us test "process" hypotheses.* However, we can suggest several speculative hypotheses that may be useful in future experiments. High job discretion might allow coping with job tensions on the job, leaving the worker in an "equilibrium" state at quitting time so that he can be master over his leisure energy. However, we have observed that workers with the least strain from work (those with "leisurely" jobs) are not the most active participators (in politics particularly). Thus this explanation seems incomplete.

An alternative explanation is that high levels of discretion on the job socialize workers into self-directed styles of behavior in leisure-if the job is also demanding or challenging. Then leisure activities, in turn, might serve as a coping mechanism for high levels of job strains "left over" from work, or they might serve as a framework for "putting more energy" into a leisure life style. This second explanation suggests that psychological tensions (but not physical strain) from the workplace find their natural output in leisure activities. The worker carries over "learned" patterns of stress compensation from work to leisure.

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*The third question is also unresolved: whether "passive" changes in activity level come only during a stressful situation (Seligman, 1975), or whether there may be long term adaptations to situations of low activity demand. Laboratory experiments at the micro level in which response over time was measured would be required to resolve this question.

c. A General Perspective Comment

An important additional perspective on broader implications of work on leisure behavior can be gained from examining leisure activity participation (and mental strain) for adult males with low employment and unemployment. This circumstance might be considered a "lowest job demand" category, and at first one might expect that freedom of action was high as well. Perhaps this would occur if job constraints were the only restrictions on behavior, but lack of other resources such as the income and social relationship opportunities that a job provides suggest that the life of the unemployed male* hardly promotes freedom of action. Findings we have obtained in the full population show that such a life is also not carefree. Indeed, the problems of both passive participation and mental strain are combined: 42 percent of the low employed are leisure non-participators vs. the 32 percent one would expect for a similar age mixture in the full population. The most obvious characteristic of the low employment male who is at his prime of life (age 30-44) in Sweden is that mental strain symptom rates are four times higher (35 percent vs. 8 percent) than for the fully employed population for depression, anxiety, sleep problems, tranquillizers, and sleeping pills. Even tiredness and overstress are higher though such workers have "nothing to do." For respondents with even less "to do" (no children at home and low employment) the symptom rates are even higher (44 percent).

The variations in job content "account" for over 60 percent of the variance between job types in the probability of leisure non-participation (and mental strain). Nevertheless the working population as a whole has fewer problems than the adults whose primary connection to the occupational system is the stigma of unemployment.

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*Similar high mental strain symptom rates and "passive" leisure occur for adult women without jobs and without household responsibilities (often middle aged women).

Chapter Five

Alternative Explanations of a Work-Leisure Linkage: Approximating a Causal Model

In this chapter we investigate whether the associations between job content and leisure demonstrated in Chapter 4 persist when other potential "causes" of work and leisure behavior are examined. We will utilize the composite work and leisure indicators to describe the general relationships: Job "Activity Level" (Psychological Demands + Intellectual Job Discretion) and the Active Leisure Composite and the Variety in Leisure variable. However, because the separate leisure and political activities (and mental strain indicators) often reveal important detail, these more specialized results will also be noted - at least in footnotes .

Can the job be said to "cause" leisure behavior? This is the implication of the classic sociological question of whether job behavior "carries over" to the leisure hours. Since we do not have longitudinal data or a controlled experimental situation it is impossible for us to conclude definitely that it does. But the comprehensive data available from the Swedish Standard of Living Study does allow us to severely restrict the alternative hypotheses. We subdivide our tests of the null hypothesis that other factors account for the associations of Chapter 4 into five sections.

5-2. Individual Background and Personality
The impacts of childhood life experiences, education and family education are reviewed.

5-3. Work Experience: Testing for "Job Socialization"
We search for evidence of increasing associations between work and leisure with increasing exposure to the work environment: the true test of "carry-over."

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*Meissner, M., "The Long Arm of the Job," Industrial Relations, A Journal of Economy and Society, October, 1971.

Other "Age-Related" Factors
We discuss the difficulties of cross-sectional analysis and search for other alternative tests of job socialization vs job selection: life cycle changes, personality "fulfillment" (through job selection), and income dynamics.

5-4. Community and Social Relations
The impacts of urban scale, and the frequency of visits with friends and relatives are reviewed.

5-5. Status and Economic Resources
We examine social class membership, income, wage, and education to estimate alternative mechanisms by which occupation might affect leisure behavior.

In section 5-6 we present a diagrammatic model and review of the overall work and leisure findings. We stop short of testing this full model empirically; In a final section we discuss several implications of our conclusions.

In each of the first five sections we will begin by referring to the relationship between the control variables and the work and leisure parameters in Table 5-1/2. The association between the control variable, such as education, and the leisure non-participation probabilities will be treated in the same manner as the job content-leisure univariate associations: in 5-1 marginal frequencies for each level of the control variable are reported. The associations between the control variables and the job content measures can be more simply treated as a correlation* between interval scales (where this is appropriate) and are reported in Table 5-2.

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*Correlation coefficients for the (0,1) form of the variable are not included (for reasons noted earlier, p. 168).

Table 5-1: FREQUENCY OF LEISURE ACTIVITY NON-PARTICIPATION (%) BY SELECTED POPULATION CHARACTERISTICS
Swedish Male Workers (Non-rural), 1968 (n = 1466)

I. INDIVIDUAL BACKGROUND AND PERSONALITY

	VARIAT LEISUR	INTELL COSMOP	ACTIVE PHYSIC	EVE SOCIAL	SUBUR-BANITE	RELIG PARTIC	MASS CULTUR	ELITE POLIT	MASS POLIT	POP. IN CATEG.
EDUCATION										
Elem. Mininum	24.5	42.2	28.8	37.7	40.2	56.0	57.1	52.7	41.3	.525
+Yrs (No Dip.)	21.8	28.6	28.9	27.7	32.9	55.3	58.9	48.2	48.0	.173
Jr HS or Voc.	13.4	12.0	22.9	18.6	31.8	51.4	53.6	36.0	53.3	.199
Acad HS, Univ.	4.1	6.4	24.8	16.8	21.8	40.9	68.5	18.4	52.0	.102
CHILDHOOD PROBLEMS										
None	17.2	28.3	23.6	25.8	31.8	51.1	56.2	45.9	48.9	.450
One	24.9	35.1	33.2	34.3	39.9	54.7	60.4	49.2	43.5	.271
Two or More	18.3	28.7	27.2	32.6	36.8	56.0	58.1	39.7	43.5	.279
FAMILY EDUCATIONAL BACKGROUND										
Low (see text)	21.8	35.4	27.6	33.1	37.2	—	56.6	49.0	40.7	.753
High	13.4	13.4	26.3	21.4	27.1	—	60.3	31.4	60.0	.244

II. WORK EXPERIENCE AND LIFE CYCLE

	VARIAT LEISUR	INTELL COSMOP	ACTIVE PHYSIC	EVE SOCIAL	SUBUR-BANITE	RELIG PARTIC	MASS CULTUR	ELITE POLIT	MASS POLIT	POP. IN CATEG.
WORK EXPERIENCE (YEARS WORKING)										
0-5	15.5	24.6	19.6	3.6	44.5	60.1	44.9	59.3	64.9	.115
6-15	16.7	21.4	21.4	13.3	41.0	57.5	48.0	47.2	60.9	.221
16-30	19.7	28.0	24.2	31.1	30.2	50.8	57.8	41.4	43.1	.322
30+	23.1	40.0	36.1	48.8	33.6	50.8	68.3	42.4	32.3	.340
LIFE CYCLE										
Mar./< 30	17.7	26.1	16.5	17.4	38.8	56.1	50.7	50.0	59.6	.157
Mar./≥ 30	18.8	32.2	29.8	41.0	26.4	49.3	62.6	38.9	37.4	.599
Unmar./< 30	14.3	22.6	22.0	2.4	51.7	63.5	39.4	61.1	67.8	.193
Unmar./≥ 30	32.9	26.5	35.8	23.1	40.5	59.5	36.9	41.4	44.2	.101
AGE										
18-30	16.6	23.5	19.9	9.1	46.5	59.5	44.6*	57.3	64.6	.271
31-49	20.0	29.7	25.6	30.7	30.3	52.3	59.8	40.5	42.7	.453
50-66	22.5	37.9	37.0	49.4	32.9	49.3	68.3	40.8	32.9	.276

*Men without jobs included in this figure.

Table 5-1 **continued**	VARIAT LEISUR	INTELL COSMOP	ACTIVE PHYSIC	EVE SOCIAL	SUBUR-BANITE	RELIG PARTIC	MASS CULTUR	ELITE POLIT	MASS POLIT	POP IN CATEG
III. COMMUNITY AND SOCIAL RELATIONS										
URBANICITY										
3 Lgst. Cities	20.5	23.8	30.8	27.4	33.8	57.8	62.7	44.2	51.3	.410
Smaller Cities	19.0	34.8	24.8	31.8	36.5	50.4	54.5	45.7	42.3	.590
FRIEND VISITS										
Isolation	43.0	43.8	39.3	52.5	53.8	69.4	81.0	58.0	51.3	.083
Normal	21.3	32.3	29.5	27.7	34.5	51.7	62.2	44.9	45.7	.552
Gregarious	11.8	24.1	21.0	20.8	32.7	52.4	46.1	42.5	45.1	.364
RELATIVE VISITS										
Isolation	28.5	35.5	31.6	34.3	49.8	65.6	68.2	56.0	53.6	.191
Normal	19.1	23.5	27.8	29.3	35.5	53.3	60.1	43.0	45.8	.508
Gregarious	14.7	28.2	23.9	28.4	26.2	45.9	47.5	41.8	41.3	.300
IV. SOCIAL STATUS AND INCOME										
SOCIAL CLASS										
I	4.0	6.0	29.0	20.2	14.7	41.0	61.0	14.4	50.5	.125
II	17.0	23.9	22.8	27.3	28.6	48.4	58.9	37.4	49.4	.368
III	25.2	40.9	30.1	34.4	45.4	60.1	53.9	58.3	42.3	.507
FAMILY INCOME (DISPOSABLE) (SKR = $0.20)										
0-12,000	23.8	35.0	22.4	15.3	58.1	58.2	53.3	63.4	58.5	.147
12,000-20,000	22.6	34.6	31.3	31.3	43.1	55.0	56.4	52.9	50.9	.233
20,000-33,000	19.9	32.3	26.5	35.5	30.7	54.0	57.9	42.6	38.5	.471
33,000+	9.5	12.5	23.3	25.8	15.5	43.5	65.7	21.4	48.8	.143
WAGE / HOUR (EXCLUDES SELF-EMPLOYED = 13%) (SKR)										
0-7	26.2	39.3	28.1	16.9	52.2	62.5	51.1	72.4	58.0	.061
7-12	23.8	37.4	32.2	32.7	42.8	58.0	49.9	53.2	42.3	.430
12-20	14.4	22.1	20.2	26.1	39.4	50.0	60.6	41.2	41.2	.291
20+	6.3	9.9	26.0	23.8	8.5	42.7	68.7	9.2	54.2	.089
FULL POPULATION (MEN)*										n=1466
	20.1	28.2	27.2	30.1	35.4	53.4	58.0	45.2	46.0	1.000
***WOMEN**										
Full Time	32.8	27.1	58.6	26.4	27.2	46.5	41.7	71.5	63.5	n=482
Part Time	35.9	35.5	60.5	34.7	22.0	47.4	32.9	78.5	72.4	n=392
No Work (Housewives)	46.9	46.2	66.4	48.2	16.4	47.6	41.5	80.8	87.8	n=743

Table 5-2: Job Content—Control Variable Correlations

A. Swedish Male Workers (non-rural), n = 1150
(self-employed and agricultural workers excluded)
B. Subsample of Above: full time workers, age 30 to 49 years, n = 504

	Psyc. Demands		Intell. Disc.		Sched. Freedom		Phys. Demands	
	A	B	A	B	A	B	A	B
Childhood Problems	.069	.067	.010	-.002	-.023	-.040	.010	.061
Education	.099	.187	.639	.611	.234	.323	-.306	-.324
Family Education	-.041	-.020	.166	.156	.103	.025	-.074	-.101
Urbanicity	-.017	-.026	.088	.086	.042	.084	-.019	-.091
Friend Visits	.047	-.011	.081	.003	.081	.029	-.017	.008
Relative Visits	.082	-.062	.071	.049	-.046	-.039	.033	.101
Married	.160	-.048	.067	.012	.028	.125	-.007	-.010
High Social Class (I)*		.25		.49		.34		-.31**
Working Class (III)*		-.28		-.65		-.40		.51**
Family Income (log)	.262	.162	.237	.397	.052	.216	-.111	-.189
Wage (log)	.282	.322	.570	.627	.267	.387	-.256	-.378
Health Problems (Physically Serious)	.110	.180	.056	-.041	-.035	-.023	-.050	.030

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* Unfortunately social class dummy variables were not included in pop. A.
In population B the social class job content correlations are (see also p.98):

Social Class I	—					
Social Class III	-.42	—				
Family Income	.32	-.25	—			
Wage	.59	-.60	.51	—		
Education	.64	-.51	.33	.59	—	
Family Education	.13	-.09	.03	.12	.24	—

** Physical exertions only; discomforts (which have a lower correlation) were separately computed, r = .20/.34 respectively. The correlations of the institutionalized job status and protection indicator with the social class dummies was r = .34 (class I) and r = -.70 (class III).

A Comment on Interpretation

In Chapter 5 we are primarily concerned whether the work-leisure associations retain their full strength when other variables are used as controls (in subpopulations or in regressions). Thus we are interested in the changes in b_x (the rate of change of participation with job content). We are less concerned about differences in the level participation between those subpopulation** means ($\bar{L}$). Therefore when regressions are used, we report (b_x), the standard errors (s_e, s_{e_x}) and ($\bar{L}$). We do not report correlations and r^2 (often over .7) primarily because they might be misinterpreted to imply that a high portion of the total variations in leisure activity is "accounted" for by our regressions.*** Much of this variation, of course, has been eliminated, with the choice of the dichotomous "participation/non-participation" variables.

For the sake of comparison all rates of change are reported as if occuring at the 50th percentile. These figures are correct (estimated) rates of change within the linear range of 25% to 75%. Outside this range "logit-type" assymptotic distortions occur. If the implication of the rate of change* is that the level of participation would fall outside the linear range of 25% to 75%, then a correction table (Table A-7) must be used to find the "true" estimated level. (For example, an extrapolated level of 20% will become 23%; 15% will become 20%; 10% will become 17%.) Fortunately these types of adjustments are not usually required (only for variation in leisure and mental strain), but logit corrections have been applied to all the calculations.

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*For significance testing with the nine cell table: the following confidence intervals apply to statistically significant difference between any pairs of activity participation rates. They are dependent on the cell sizes compared. The range reported below represents cell sizes of 50 and 110 (extreme cells along the heavy-light dimension), and cell sizes of 50 and 310 (extreme cells along the active-passive dimension). This is an average range which would apply to most pairs of cells in the table; since the direction of the relationship is specified a one tailed test is used.
.05 confidence interval = 12% A-P, 14% H-L
.01 " " = 17% A-P, 19% H-L
.001 " " = 22% A-P, 25% H-L

**This method is particularly helpful when leisure activity is constant with respect to the control variable in the subpopulation, or when non-linear relationships exist.

***The r^2, of course, does reflect how well the cell by cell non-participation probabilities can be summarized by regressions.

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*For example: if the mean value of participation is 35% and b_x = 10% the four unit "activity" level scale implies that an active job will have a 15% non-participation rate and a passive job a 55% non-participation rate. The 15% figure falls outside the linear range (25% to 75%) and would have to be adjusted to yield the "true" estimated probability: ≈20%.

5-2 The Effect of Individual Background on the Work-Leisure Association: Testing for Environmental Components of "Personality"

One major methodological problem to be solved in our analysis is the possibility that "confounding" factors dependent on the individual's background or personality determine both his selection of work and his leisure behavior.

The most obvious implication of the "personality (job selection)" effect is that at each point in time (and, thus, in our full cross sectional sample) we could predict which individuals would have both jobs and leisure of a particular type (i.e. active jobs and active leisure) by knowing personality or individual background characteristics. We test such hypotheses below. There is another form of the "personality (job choice)" hypothesis which is much more difficult for our data and which we postpone further discussion of until the next section. This second variant holds that individual background or personality does not manifest all of its effects until full maturity has been reached. "Latent values" instilled or born within the child continually change behavior (i.e. through job selection) in such a way that the "intended" personality is only gradually revealed. This elusive process could also account for an increasing relationship between work and leisure.

Three broad measures of background experience are constructed from raw variables in the Swedish data, and we will analyze them in turn: education, childhood life experiences, family educational background.

a.Education

Education is a standard measure of individual background with broad applicability. We use it later as a social status indicator in Section 5-5 In this section education measures exposure to the "process of socialization" presumed to occur at school. We use it to approximate the individual's learned tendency to "actively" tackle problems at work, and engage in new challenges in leisure (recall the personality attribute of "competence" or situation "mastery," p. 71).

Education* is a "tough" control for the work-leisure associations. Most measures of individual background have a clear "causal" status: their occurrence is indisputably "prior" when related to elements of the individual's present behavior such as occupation However, education can also represent a chosen process of anticipatory socialization for a particular career. Thus to control for it might eliminate a significant element (skills) of the occupations's effect. Indeed Kohn and Schooler observe that using education as a measure of personality substantially weakens their findings about job content. If education is used as a "proxy" measure for past personality (intellectual flexibility) the impact of "personality" on job content increases (.13 to .40) making it larger than the effect of job content on "personality" (.26), instead of smaller as reported in their primary findings (AJS, 1973).

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*Definition of Education Variable

This variable is used a truncated version of an existing variable in the Swedish 1968 Standard of Living Study. The variable is roughly similar to years of education, but includes data of whether the formal educational experience was occupationally or academically oriented.

1. Statutory minimum education (7 years) elementary school.
2. Additional years of education (but no graduation diploma).
3. Regular formal education at the intermediate (junior high/early high school) level. Or:
   Graduation from an occupational training program (e.g. business, technical school).
4. Graduation from a full academic high school (6 additional years beyond elementary, age 19).
5. Some university education or a university degree.

Main Effects of Education

We observe in Table 5-1 that education has quite strong association with most of the leisure and political participation probabilities. The effects are very strong for Variations in Leisure, Intellectual Cosmopolitan activity and Elite Political activity. Only Active Physical Leisure, Mass Cultural Leisure, and Mass Political Activity display weak or opposing tendencies. These variations are often of similar magnitude to the job content leisure associations (comparing Tables 4-2 and 5-1).

Another difficulty (for Kohn and Schooler as well) is that education is so colinear with intellectual job discretion (r = .64)* that to introduce it into a standard multivariate linear regression model with job content would lead to ambiguous coefficients (however, see page 273). Fortunately (and surprisingly, in view of this correlation), there is a substantial number of Swedish workers** with "constant" education (52% have the statutory minimum 7 years elementary school) who still have substantial variations in intellectual job discretion.

Thus the most straightforward manner for "purging" the work-leisure associations of the effect of education is to examine them in the large subpopulation where education is the minimum elementary school. These results are reported and summarized in terms of regression coefficients in Table 5-3 and the nine cell tables in 5-4.

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*Correlation with Psychological Job Demands r = .10.

**In the United States a similar education "bulge" occurs at 12 years education. For the U.S. Quinn et al. (1971) report that 55% of the work force has a discrepancy between actual education and education required for the job. The figure reflects discrepancies at all levels of education. In our Swedish sample at one "cut point"- only-elementary education—the discrepancy is 23% of the full work force.

Table 5-3: Impact of Individual Background Experience and "Personality" on the Work-Leisure Relationships (Job Content Effects Summarized in Terms of Activity Level Variations: 'b_x' is the change in probability of non-participation per unit change in activity level (a four unit scale).) $\bar{L}$ = category mean; s_e = standard error.* Swedish male workers (non-rural), 1968, age 18-66 (n = 1466)

	Variety	Active Leisure					Composite	Non-Active Leisure	Political Activity	
	Variations in Leisure b_x $\bar{L}$ s_e	Intell. Cosmop. Leisure b_x $\bar{L}$ s_e	Active Physical Leisure b_x $\bar{L}$ s_e	Evening Social Leisure b_x $\bar{L}$ s_e	Suburbanite Leisure b_x $\bar{L}$ s_e	Relig. Organiz. Leisure b_x $\bar{L}$ s_e	Active Leisure b_x $\bar{L}$ s_e	Mass Cultural Leisure b_x $\bar{L}$ s_e	Elite Polit. Activity b_x $\bar{L}$ s_e	Mass Polit. Activity** b_x $\bar{L}$ s_e
Full Sample	-11.2 7 20%	-11.7 8 30%	-4.9 6 27%	-3.8 8 30%	-10.5 3 35%	-5.2 5 54%	-7.2 6 35%	+2.8 4 58%	-14.0 4 45%	-6.0 3 46%
Childhood Problems										
= 0	-9.6 9 17	-10.9 11 28	-4.9 7 24	+.3 9 26	-10.5 7 32	-2.5 7 51	-5.7 8 32	+2.6 7 56	-17.1 3 46	-7.7 7 49
= 1	-13.9 11 25	-12.0 12 35	-5.8 12 33	-8.4 20 34	-9.9 5 40	-9.0 8 55	-8.7 12 39	+3.5 10 60	-12.9 7 49	-4.3 4 44
= 2	-8.5 9 18	-10.4 11 29	-2.7 9 27	-5.6 10 33	-9.3 4 37	-6.9 6 56	-7.0 8 36	+2.7 9 58	-11.6 4 40	-5.5 7 44
Education										
= 7 yrs.	-8.3 5 25	-7.6 12 42	-7.1 3 29	-2.1 12 38	-7.2 5 40	-4.7 8 56	-5.7 7 41	+.6 5 57	-9.7 4 53	-5.4 5 41

(WOMEN WORKERS -- See Section 5-3_2 n = 392 part time, n = 482 full time)

Part time	-6.2 10 36	-15.2 10 37	-3.2 7 60	-6.7 7 34	+1.6 13 19	-1.3 7 47	-5.0 9 39	+2.5 6 66	-7.7 12 79	-.5 15 73
Full time	-7.6*** 12 32	-10.9*** 14 29	-6.1 6 59	-4.3*** 7 26	-3.9*** 7 26	-6.2 6 46	-6.3 8 37	+6.4 6 58	-11.7 4 74	-5.7 10 64

*The hypothesis that there is some statistically significant difference between the "active" and "passive" jobs is significant at the following levels: The confidence level is p = .0001 for (S_e) less than (b_x); p = .01 for an $(S_e) = 1.8(b_x)$; p = .10 for $(S_e) = 3.1(b_x)$.

**Variations recorded along the unresolved strain scale (4 unit scale, also).

***Interaction effect is stronger, see p. 246

Table 5-4: Job Content-Leisure (Non)-Participation by Individual Background

Swedish male workers (non-rural) 1968 age 18-66 n = 1466 (percent)

A. Education

1. Elementary School Education Only (n = 771)

Intellectual Job Complexity	VARIATIONS IN LEISURE Psychological Job Demands: None	Hectic	Hectic& Demand.	INTELLECTUAL COSMOPOLITAN L.: Lo		Hi	ELITE POLITICAL ACTIVITY: Lo		Hi	MASS POLITICAL ACTIVITY: Lo		Hi
Monot./Repetit. & Low Skill	33	34	32	58	49	37	78	62	55	52	55	29
Low Skill (Not Monot.)	27	25	19	47	48	46	60	51	42	59	46	28
High Skill (over Elem. Ed.)	27	17	12	13	36	19	48	47	39	55	57	46

2. Above Elementary School (n = 695)

Intellectual Job Complexity	Psychological Job Demands: Lo		Hi	Lo		Hi	Lo		Hi	Lo		Hi
Lo	42	27	17	25	27	17	58	59	67	42	59	50
	23	24	18	27	26	24	71	60	32	35	49	38
Hi	12	14	8	16	18	10	41	33	19	61	53	47

Cell Sizes: left to right; top to bottom

ED = 0 / n = 41, 62, 38 / 142, 236, 120 / 24, 45, 63
ED = + / n = 12, 22, 12 / 52, 80, 34 / 86, 146, 251

CP = 0 / n = 22, 31, 17 / 88, 134, 51 / 69, 100, 148
CP = 1 / n = 13, 26, 16 / 51, 104, 54 / 19, 45, 69
CP = 2+ / n = 18, 27, 17 / 55, 78, 49 / 22, 46, 97

B. Childhood Problematic Experiences

VARIATIONS IN LEISURE

No Problems (n = 660)

Lo		Hi
24	37	24
22	24	10
15	15	8

One Problem (n = 397)

Lo		Hi
67	31	44
35	27	24
16	10	12

Two or More (n = 409)

Psych, Job Demands: Lo		Hi
31	31	18
24	24	23
14	9	9

Interactive Effects of Education (Elementary School Subpopulation)

Intellectual Cosmopolitan Leisure covarys considerably according to the actual education of the worker. Nevertheless, among workers with minimum education the estimated unit variation (b_x) in the probability of non-participation according to active-passive job content is almost as strong as it is in the full sample (7.6% vs. 11.7%)*.

Variations in Leisure, the Active Leisure composite (but possibly not for "non-active" leisure)** all follow the same pattern. Variety in leisure is indeed lower for workers with minimum education than for the average worker (probability of low variety 20% vs. 25%). But the variation in participation by job content is only slightly less than for the full sample (8.3% vs. 11.2%). In summary we find that the unit covariation of active-passive work with the active leisure participation is 5.7% among workers with statutory minimum education compared to 7.2% in our full sample: a 21% reduction. This finding only illustrates that education does not account for all of the work-leisure assocations. Section 5-5("status") shows that the overall variation in leisure activity by education remains substantial.

The association of job content with political participation also persists when education is held constant. In Chapter 1 we noted that many political scientists list education as a crucial social-economic-status explainer of political participation (Milbrath, 1965; Verba and Nie, 1972). We might conclude that these researchers have attributed some "spurious" variation that may really belong to the correlated job content cause of political participation. They have concentrated their attention on limited aspects of occupation.*

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*The range of non-participation is even stronger in Table 5-4. It varies from 58% for workers with passive jobs (n = 41) to only 19% for workers with active jobs (n = 63).

**Table 5-3: the job content association with non-active leisure does almost disappear in the low education population, but the estimate is rather unstable. In the low income population (see section 5-5) the Mass Cultural Leisure measure again demonstrates a strong active-passive association.

Education's promised effects of enriching quality of life and experience of culture appear to occur on the job as well. Our leisure indicators show that the job itself may be the primary classroom for half of the Swedish workforce. We discuss this implication further on page 276.

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*Milbrath (1965) observes that occupation apart from "status" is a difficult concept to measure and is thus often eliminated from further consideration. However, Lane (1959) cites four measures, two of which are related to ours.

b. Childhood Problems

Although the Swedish data contains no personality inventory questions(preventing examination of many hypotheses about the relationship between "personality" and behavior) there is data on the workers life experience during childhood which may be good "proxy measure" for some aspects of personality. Kohn and Schooler (1973) test for the reciprocal effects of job content and personality. They present a convincing case that the effect of job experience on individual personality is about double the effect of personality on job experience (for "substantive job complexity"). If Kohn is correct, two deductions* from his findings suggest that the most significant personality measure should be past social-environmental experience.**

The Swedish data base includes information on loss of parent, divorce, family dissension, many residence changes during childhood, economic difficulties, foreign immigration, and illnesses of family members or the respondent. An additive scale*** formed from these variables is roughly similar to the Stressful

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*Since the present environmental experience (the job) has a bigger impact for present psychological functioning than present personality, the most relevant "job purged" personality measure would be that from the time just preceding the first job. We can extrapolate Kohn's environmental effects backward in time and conclude that crucial determinant of even this "pure personality" measure was childhood environmental experience.

**See Holmes and Rahe, 1967; Miller and Swanson, 1960; Langner and Michaels, 1963. The linkage to the occupational system as a whole is provided by Kohn, 1969. Our conclusion is equivalent to the statement that the evolving pattern of "fulfillment" represented in successive job selections must have had its roots in (measurable) childhood incidents.

***Our scale is composed by adding all variables with equal weights (although "many" residence changes counts extra, as well as own illness). According to the Holmes and Rahe's (1967) analysis for weighting stressful life events by the strength of their impact on the individual, the following weights could be used to construct a more exact indicator (1 to 100 = max.): (cont'd.)

Live Events indicators developed by Holmes and Rahe (1967) to link total life stress and illness, and to the scale used by Michaels and Langner (1963) to predict mental health "risk" in midtown Manhattan. "Life Stress" may be a rough* measure of the individual's "personality orientation," relevant to at least one area of psychological functioning: sensitivity toward the effects of, or admission of evidence of environmentally-induced stress (see discussion, chapter 2A, page 65).

While such an "environmental" measure of personality has been used in the literature to predict effects of mental strain, it is rarely used in discussion about leisure behavior. We shall attempt to "legitimize" such a measure of personality in connection with "activity levels" (one half of our model of psychological functioning) through demonstration of its effects in our data on mental strain, the other half of our model. Thus we have several *long footnotes* on the mental strain findings.

(cont'd.)

1. Death of parent or spouse		100 (sibling = 73)
2. Divorce		73
3. Own serious illness		53
4. Illness in family		44
5. Economic difficulties		38
6. Family dissension		33
a) Trouble with in-laws	= 29	
b) Changes in spouse arrangement	= 35	
7. Residence changes		20 (each)

*For a discussion of the accuracy of self-recall of past life events see Casey, Masuda, and Holmes, 1967. They conclude that in spite of some objections to the validity of such indicators that a self-recall indicator is valid when the events in question are *salient* events for the individual. "Validity of recall is related to the saliency of illness.... Consistency of recall is similarly related to the saliency of life events."

Main Effects of Childhood Experience

Our first observation (from Table 5-2) is that the job content measures do not show a strong relation to the childhood problem indicator (r = .07; .01 respectively for psychological demands and intellectual discretion). Since the leisure participation indicators also do not display a strong variation by childhood experience in Table 5-1, we would be tempted to conclude that individual background does not account for the work leisure associations in Chapter 4. But, there is strong evidence from the mental strain findings* that the psychological impact of childhood problems does not manifest its main effects linearly but instead as a

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*Mental Strain Findings

One of the most striking findings in this analysis is the substantial and complex impact of stressful life events during childhood on the job content-mental strain associations. These differences suggest a broadly identifiable pattern of stress "coping styles" that not only appear to be enduring characteristics of the individual ("personality orientations"), but linked to an identifiable measure of environmental circumstance: life stress in childhood.

The "childhood life stress" indicator does not display strong linear variation with the strain symptom level (average r = .076, full scales). Since the psychological job demands are moderately correlated on the average with mental strain levels (r = .142, full scales) and since the linear association between job demands and childhood problems is only (r = .069), childhood problems could not be said to account for much of the observed job content-mental strain associations (r drops from .14 to .12)

However, when subpopulations representing differences in childhood life experience are examined, the impact of childhood stress on the job content-mental strain associations is substantial. Examination of 9-cell tables controlled for childhood life stress levels shows that with "zero" childhood problems there is little variation by "job strain" for any of the symptom indicators, except general tiredness. Examination of the "one childhood stressor" level shows very strong variations by job content for the mental strain indicators (double that of the full population). At the highest childhood stress level ("two or more stressful events"), sensitivity both in terms of tiredness, and the mental strain and leisure participation indicators, diminishes slightly. A new set of "sensitive" symptoms appears—more closely related to physical illness: aches and pains become much more strongly differentiated for workers with differing job content.

(footnote continued)

Mental Strain Findings—Footnote Continued:

Mental Strain Symptoms

Childhood Problem Level	Tiredness			Sleep Probs			Depression			Aches&Pains			b_x
	$b_x \cdot x$	y	s_e	$b_x \cdot x$	y	s_e	$b_x \cdot x$	y	s_e	$b_x \cdot x$	y	s_e	ave.
0	39.6	26.6%	5.9	6.8	5.8%	3.2	17.2	13.6%	4.8	10.8	32.4%	5.2	20.8
1	46.0	32.1	6.7	20.4	11.3	5.9	50.0	17.3	7.6	9.2#	41.8	8.6	30.4
2+	28.0	42.8	6.0	17.2	8.9	3.1	14.4	18.4	4.1	39.6	40.2	9.0	28.0
Full male working pop. (non-rural) (n = 1466)	39.6	ave. = 30%	9.0	13.6	ave. = 8.3	2.7	16.8	ave. = 16.0		18.0	ave. = 37.4	5.7	24.4

#unreliable estimate

Note: These findings have not been corrected for asymptotic probability (logit-type) errors; for more accurate analysis see report ______.

The model of psychological functioning in Chapter 2A provides some explanation of what might be occurring for each group:

a) Individuals with relatively unproblematic pasts (50% of the population) "cope with" the stress of current life during sleep. Individuals facing situations of highest unresolved strain will simply experience and report greater tiredness.

b) Individuals with a significantly problematic past (next 25% of population) are made more sensitive to current life stress and, when they cannot cope, their mental state is affected. They display higher levels of mental health symptoms and changes in leisure behavior.

c) Individuals with a substantially disturbed past no longer manifest conscious mental "disequilibrium" symptoms. Such symptoms would only reconfirm disturbing knowledge of reality that can no longer be directly faced. Instead the residual strain is "repressed," mental symptoms are "denied," and the result is increased psychosomatic symptoms (which carry less evidence of the problem source).

An additional postulate is that the general level of symptoms increases moderately with higher levels of childhood stress. To test this hypothesis we add the rates of psychosomatic symptom differences to the rate of reported mental strain symptoms. Doing this eliminates, as suggested, some of the impact of individual styles of stress response: the sum of tiredness, mental strain and psychosomatic symptoms of mental strain is almost constant at each level of childhood background. The remaining variation reflects moderate increases in the total symptom level for increases in unresolved strain from the work environment (the heavy job-leisurely job diagonal).

(footnote continued)

changing sensitivity to job conditions within each childhood experience subpopulation. These are interactive "intensifier" effects (Coleman, 1964) in some populations and a "damper" in others.

Interactive Effects of Childhood Problems

The strength of the work-leisure association is reviewed within three sub-groups:* workers with no childhood problems, workers with one, and workers with several problems. Table 5-3 shows that the same population group that was doubly sensitive to job strain at work in terms of

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Mental Strain Findings—Footnote Continued:

If, as we suspect, experience of a stressful childhood is a major determinant of personality orientation (at the very broadest level), then the effects of individually specific "responses to job stress" are partially eliminated if one aggregates across all major coping styles. This conclusion suggests that environmental stress has an impact on individual behavior regardless of the "personality type". If such a finding were supported by other research, this could be a powerful argument for the need to improve work environments. This conclusion does not deny the importance of individually specific responses to environmental stressors. It merely confirms the well-supported psychological conclusion that individual response styles differ. The new implication, however, is that these response styles may be systematically linked to identifiable social realities in childhood (and probably adulthood as well).--End of footnote.

*The childhood experience indicator must be constant in time if it is to be used as a basis for controlling the effects of work environments. Fortunately most of the component measures have been relatively stable over the last several decades (Johansson, 1972). However, there are two exceptions: "residence change" has increased and economic difficulties have decreased (drastically for the under 35 population). The latter effect is larger (it represents a third of the indicator variation) and thus our indicator of childhood problems may be slightly biased toward younger populations for low problem levels.

We attempt to estimate the magnitude of this effect: the average age of each child experience group is: 0 = 39 years; 1 = 43 years; 2+ = 41 years. The childhood problem indicator for each age group is 18-30 = .82; 31-50 = 1.01; 51-66 = 1.05.

Depression, Anxiety, Sleeping Problems and Drug Consumption, is also most sensitive to the "activity level" of the job: workers with intermediate* levels of childhood problems.

The work-leisure association persists in each subpopulation but its magnitude (b_x) changes. For the "sensitive" group the rate of change for Variations in Leisure changes from 11% in the full population to 14%. We can use the slopes to calculate the full variation in leisure participation implied by the difference by "active" vs. "passive" jobs. For the Composite Active Leisure Indicator the "sensitive" worker with a passive job would have a 59% chance of non-participation while a worker with an active job would have a 24% chance. In the full population the corresponding figures are 51% and 28%. Even the measure of "non-active" leisure (Mass Cultural Leisure) displays a stronger work-leisure association in this "problematic past"** subpopulation; and a diminished sensitivity in the group which has experienced no "childhood traumas." However, for the political activity indicators (only) the reverse is true: it is the individual with a non-problematic childhood who displays the strongest sensitivity (rate of change, not level. The overall level of participation is higher for this group).

We find that background is indeed an important determinant of leisure participation, using an individual background measure that may be an important determinant of "personality" (see p. 32). There is a slight "linear effect": workers with no childhood problems are more likely to be participators in leisure* and political activities in general. However, the primary impact of childhood experience on leisure is an interactive effect—in conjunction with job content. Workers with more problematical backgrounds appear to be more "sensitive" to working conditions in a manner predicted by the discussion in Chapter 2A.** This variation, however, does not lead to total insensitivity to job content characteristics within any group. The maximum/minimum ration of "sensitivity" is approximately 3:2, less than for the mental strain indicators. This is the second piece of evidence that the associations between work and leisure from Chapter Four cannot be attributed to the effects of childhood background or "personality."

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*For an explanation of why this group should be most sensitive see "Mental Strain Findings—Continued" and p.

**Correcting for logit distortions would increase the strength of this effect.

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* For Variations in Leisure non-participation is 18% for workers with problems-free childhoods, vs. 20% for all workers in our sample.

**This explanation is consistent with our model of psychological functioning from Chapter 2A: with zero childhood traumas the individual feels better able to master the tensions of life (and job) and thus can do so. With a history of more "problems," confidence declines, and "residues" of past problems increases; thus sensitivity to job strain increases. With even more problematic life circumstances, a reversal is noted that is consistent with several different explanations: 1) the individual may be beset by so many problems of health, family, or psychological difficulty that problems on the job are relatively insignificant, or 2) the individual begins to "deny" "disturbing" evidence of the debilitating effects of his problems or his behavior.

c. Family Educational Background

A primary component of individual background is the family status during childhood. It is another measure of early life conditions that could conceivably effect not only present behavior (the work and leisure choice),* but also the elusive "latent seed" of personality development that could affect job selection (Kohn, 1969; Miller and Swanson, 1960)—see section 5-3c.

The Swedish data base offers rich opportunities for constructing measures of family background.* The educational attainment of family members was chosen as the indicator with most plausible impact on both job choice and at least some leisure or "cultural" behavior.** One alternative measure, family occupational social status (based on an extrapolation of the traditional Swedish occupationally based social class) was rejected because it relied so heavily on assessments of farm size, a widespread status indicator during the childhood of many sample respondents. It was not clear that such a measure of background would be as relevant to contemporary work and leisure behavior.*** The final measure of family educational background is an equally weighted average of three components: father's education, mother's education, and the average of siblings' education.*

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*The variables available include: occupational category of father (10 categories/57 categories) and mother (5 categories), as well as the education of father and mother (4 categories), and the education (3 categories) and social class (2 categories) of siblings.

**Agneta Lundahl, Fritid Ock Rekreation, L.I.U. Almanna Forlaget, 1970. She finds that fathers and mothers social status has a major impact on theater and concert attendance, book reading—a "fine cultural" subset of activities from the intellectual cosmopolitan indicator. Her data base is the same as ours (plus the rural population).

***This may simply represent the researcher's "bias." I did not feel familiar with the life style implications of the occupational mix (including a variety of farmers and craftsmen) from the early 20th century. Also an initial postulate of this research is that the relationship between work and leisure could well be substantially different for the rural population.

Main Effects

We find that family background is significantly correlated to intellectual job discretion (r = .17), but the overall correlation with activity level on the job is hardly significant (r = .09).** Family background does display a significant positive relationship to participation in both elite political participation, intellectual cosmopolitan leisure, and variety in leisure.

This measure is used as a control for the work experience analysis in the section 5C. Other analyses with it are not performed.***

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*Only father's and mother's education were averaged for respondents without siblings (10%). For young "only children" family educational background may be relatively understated. Siblings would have the higher education on the average than parents due to the contemporary increase in higher education. The sibling education component should probably have been eliminated.

**Psychological job demands r = -.04.

***Further computations are necessary from Sweden, although approximate (2 x 2 table) control data is available.

5-3 Testing for Time-related Effects

a. Job Socialization

In Chapter one we hypothesized that if workers' behavior patterns are "carried-over" from work then the strength of association between the job content and the leisure indicators should increase with increasing job experience. In our data such a test cannot really be undertaken because of the lack of longitudinal information on jobs held at each point in a worker's career. However, we do have data on the duration of the worker's total experience in the labor market and by making one major assumption we will use this measure as an indicator of "exposure" to work environment effects. We must assume that job content has been constant (or, more correctly) that any changes which have taken place in the job type have no systematic effect on the work-leisure associations (for a similar example see Lipset, 1956). As we noted above, the "job selection" position directly rejects just such an assumption, and suggests that personality and background experience are responsible for selection of congruent life styles. The simplest mechanism for this explanation is that the worker's job may have changed, according to an inner background predisposition, in such a way that the work-leisure association merely reflects job mobility.**

We tested for some of these background predispositions in the section above. Since we found that such "fixed factors"*** as education, family

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**Limited time series job mobility data should soon be available (1968-1974) in the Swedish data sample.

***According to the simplest theory the direct effects of childhood experience and education "stop" with the end of childhood, and thus increasing associations with work experience duration could only be due to factors of current relevance to the worker.

background and childhood experience, while significant, did not account for a major fraction of the work-leisure associations. We will now test for changes in the work-leisure association by work experience cohorts, and compare results. It should be noted that there are several "non-fixed" factors* that might account for a changing work-leisure association over time, related to aging: "personality" fulfillment relating to job selection; life cycle; and income dynamics. We return to these in the second half of this section.

Main Effects

The first problem we encounter is that the overall frequencies of participation change substantially by work experience (or possibly age; see p. 238), although all activities do not change at the same rate—see Table 5-1. To compare cohort-to-cohort changes we must therefore express the within-the-cohort job content differences in terms of relative rates (100 = average):** i.e. job type "x" has 125% of average participation in cohort A and 130% of average participation in cohort B. We subdivide workers into cohorts of 0 to 5 years experience, 6 to 15 years, 16 to 30

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*Labor Market Changes
We cannot discount the explanation that systematic structural changes in the labor markets may induce "job mobility" effects that are indistinguishable in our data from work experience effects. This factor probably represents a small fraction of the differential that appears.

**We still have the problem of asymptotic distortion (see "logit discussion," p. 323; Blau and Duncan, 1967, p. 198).

A second correction (minor) is made in the work experience cohort analysis for the effects of changing relative job content composition participation rate (which is used to calculate the relative participation rates). This correction (which usually amounted to no more than 2% in a 35% average) was made by using the overall population job content mixture to compute a set of weights for each of the four cohorts. When the mean is calculated, the change does have the effect of slightly leveling out a "bump" in the participation rates at middle age due to the increased frequency of active jobs in that period.

years, and over 30 years experience.

To decrease the number of separate findings, and increase the stability of our estimates, we use the five "active leisure" indicators as a composite measure of relative participation. The composite is obtained by averaging rates for the five (independent) "active leisure" indicators: Intellectual Cosmopolitan Leisure, Active Physical Leisure, Evening Social Leisure,* Suburbanite Leisure, and Religious Organizational Leisure.

The tabulation of relative participation rates in the composite measure of five active leisure categories, and in one "passive" leisure category by work experience "cohorts" is presented in Tables 5-5 A,B in the standard 9-cell table format. "Newcomers" to the labor force (0 to 5 years)—regardless of their job content category—display high variance and relatively small systematic differences in active leisure participation rates. Table 5-5 shows that workers with "passive" jobs in the 0 to 5 years experience category the relative participation rate was 90 by comparison to 109 for workers with the most "active" jobs. These differences

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*This indicator was the least closely related to the job "activity level" measure (it was predicted better by intellectual discretion alone). Nevertheless its association with "activity level" is positive, and it fits the "concept" of active leisure, so it is included.

Another problem is that because of equal factor loadings, the "restaurant" variable is included in both the evening social and the intellectual cosmopolitan leisure clusters, an error in the present context because of double counting. The error should not be large because it is only one of 19 measures.

Table 5-5: Relative Participation in "Active" and "Non-Active" Leisure Patterns by Duration of Work Experience

Sweden 1968 male workers (non-rural) n = 1466 (percent)

A. "Active Leisure": Intellectual Cosmopolitan; Active Physical; Evening Social; "Suburbanite"; Religious Organizational

Psychological Job Demands

Intellectual Job Complexity	0–5 YEARS			6–15 YEARS			16–30 YEARS			30+ YEARS		
	None	Hec- tic	Hectic& Demand.	Lo		Hi	Lo		Hi	Lo		Hi
Monot./Repetit. & Low Skill	90	92	—	94	86	—	90	78	95	56	81	83
Low Skill (Not Monot.)	94	99	—	92	96	83	98	92	101	87	87	102
High Skill (Over Elem. Ed.)	108	101	109	104	111	127	102	119	119	124	117	128

0–5 YEARS: $b_x \cdot x = 19.7$, $s_e = 2.2$

6–15 YEARS: $b_x \cdot x = 40.5$, $s_e = 9.5$

16–30 YEARS: $b_x \cdot x = 35.8$, $s_e = 7.2$

30+ YEARS: $b_x \cdot x = 59.1$, $s_e = 10.3$

B. "Non-Active Leisure": Mass Cultural Leisure

Psychological Job Demands

Intellectual Job Complexity	0–5 YEARS			6–15 YEARS			16–30 YEARS			30+ YEARS		
	Lo		Hi	Lo		Hi	Lo		Hi	Lo		Hi
Lo	119	111	—	145	92	—	51	137	114	127	106	159
	108	89	—	94	116	92	105	110	126	111	107	86
Hi	102	116	95	131	107	75	97	84	83	93	103	72

0–5 YEARS: $b_x \cdot x = -22.0$, $s_e = 11.2$

6–15 YEARS: $b_x \cdot x = -55.1$, $s_e = 16.4$

16–30 YEARS: $b_x \cdot x = -16.2$, $s_e = 20.5$*

30+ YEARS: $b_x \cdot x = -67.8$, $s_e = 15.2$

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*Very low reliability: standard error greater than $b_x \cdot x$.

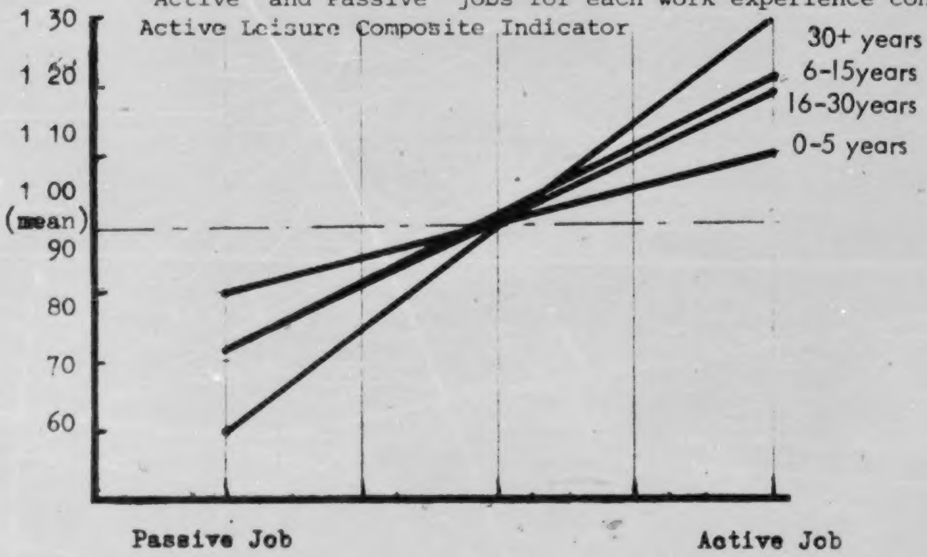
must indeed reflect the impact of childhood background or personality, but they are barely statistically significant. Workers with additional decades of working experience show substantially higher (if irregular) differences in leisure participation. For workers with over 30 years of experience the difference in participation rates between workers with active and workers with passive jobs is 72 points (56% vs. 128%) four times the difference for workers just beginning their careers. After the full occupational career workers with "active" jobs have over twice the probability of participation in active leisure pastimes as workers with "passive" jobs.

What about carry-over effects from "passive" work? The Swedish data does not provide equivalent coverage of "non-active" (relaxation or "home-centered") leisure, and only the "mass-cultural leisure" indicator seems to fit this description. (Lack of multiple measures also makes our figures less reliable.) There is evidence of a carry-over of passive behavior from work to leisure as well in table 5-5B. Inexperienced workers with passive jobs have a slightly higher relative participation in mass cultural leisure than workers with active jobs (119 vs. 95 significant at .05 confidence level). This difference increases irregularly for workers with additional decades of experience, and finally rises to 127 vs. 72 for workers with over 30 years of work experience--again several times the effect at career beginning.

At the simplest level of generalization we could conclude that workers with active jobs have increasing participation in active leisure with increasing job experience, and declining participation in "non-active" leisure activities. On the other hand, workers with passive jobs exhibit the reverse pattern: with increasing job experience they exhibit higher "non-active" leisure participation, and declining active leisure. The results are a symmetrical confirmation of the hypothesis that workers are socialized by their jobs into active or passive leisure patterns outside of work.

We do not find that workers with passive jobs cease to engage in all activity after the work day is done, but that the "content" of the activity appears to change. Indeed, one of the most striking findings is that the sum of the relative participation rates in active and passive leisure categories for workers with active and passive jobs is rather constant in all work experience cohorts.*

Diagram 5-1
Relative Participation Changes ($b_x.x$) for workers with "Active" and "Passive" jobs for each work experience cohort
Active Leisure Composite Indicator



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*Averaging the "active" and "non-active" relative participation rates shows that the deviations drop drastically:

0-5

105	102	—
101	94	—
103	109	102

6-15

121	88	—
94	104	89
116	107	100

16-30

71	108	105
102	101	112
98	98	97

30+

93	94	121
99	97	94
104	109	100

Regression lines are plotted for each cohort in Diagram 5-1. These changing slopes might be due to an undiscovered "sensitivity increase" to active or passive work with increasing age. However, the slope differences change direction for "non-active" leisure (see Table 5-5), More plausibly, they are consistent with the effects predicted by a process of "job socialization." Older workers show stronger associations because of the accumulated effects of 30 years of environmental impacts. We can illustrate the case more clearly by plotting a separate regression line for each job content type along a work experience axis. We have only four work experience points, so there is considerable error in each equation, but the results (listed in Table 5-6 and plotted on Diagram 5-2) show the magnitude of the hypothesized "job socialization" effect over the life span.

Table 5-6: Testing for Job Socialization

Changes in leisure participation at 4 work experience cohorts for each of six active and passive job content categories—Swedish male workers (non-rural), n = 1466.

Degree of "Activity"*		b_o intercept = relative participation during first year of work	b_x change in probability of participation per year of work	r^2	portion of population
"passive"	1	103%	-1.08	.72	4%
"	2	93%	-.18	.19	19%
"center cell"	3	100%	-.19	.05	32%
"	4+	102%	+.20	.06	24%
"active"	5+	116%	+.28	.28	21%

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*All job content cells were given an "activity" rating according to their projection onto the active-passive diagonal, according to the formula: activity level = job demands (1,2,3) + job discretion (1,2,3)

**The "pluses" refer to slight corrections that should be made in the computations that arise because the original 4x4 table was truncated to a 3x3 table.

Diagram 5-2: Test of the "Job Socialization" Hypothesis
Relative participation in the Active Leisure Composite (five "active leisure" categories) for workers with vary "Activity Level" at present job. - plotted by duration of work exper.

Sweden male workers (non-rural) 1968 age 18 to 66

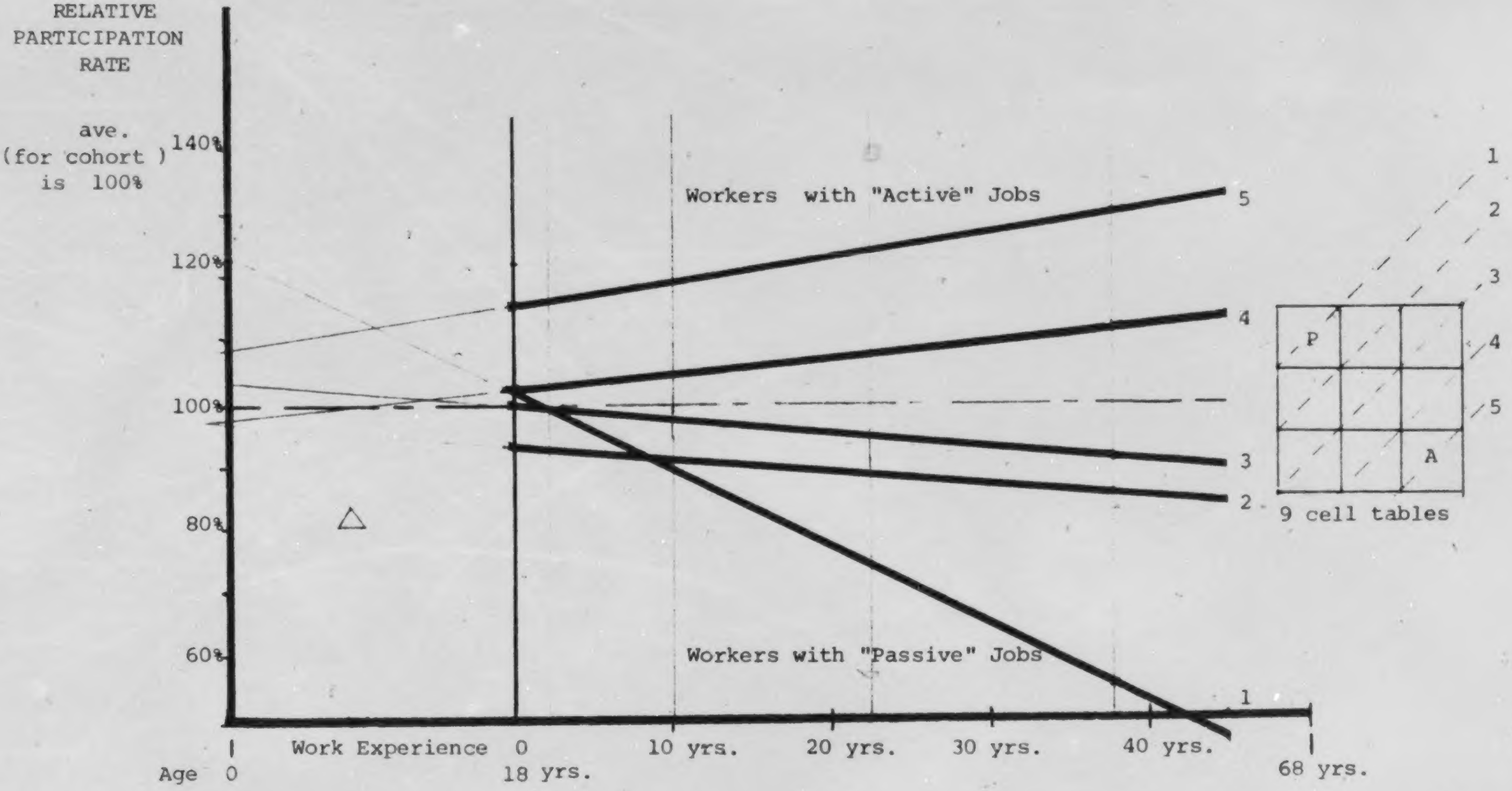

Diagram 5-2 illustrates a plot of relative leisure activity participation by work experience duration (cohort midpoints) for five gradations of active work (on the top) and passive work (on the bottom). The lines not only show a relatively clear pattern of progressive change (given the limited statistical reliability), but when these regression lines are extrapolated back to a common origin, we see that it occurs in early childhood—at about age eight!*. Such an initial point is congruent with an explanation that children begin their lives with relatively equal tendencies toward active and passive life styles and are "socialized" into different life style tracks during childhood. By the time of their first job these differences in direction are "significant." Life patterns do not remain constant at that point, however, and further differences reflect the process of job socialization where life patterns in general gradually bend to the pressures of the society's most heavily obligated sphere of life—the work environment.

These changes in participation probability (per year) by job "activity level" provide a rather consistently estimated ($r^2 = .80$) socialization "constant." This is our first rough aggregate estimate of the rate of change of leisure experience per year per activity level increment: k = .28% / year / activity level increment. We can use this parameter to interpret the findings more specifically. The job socialization impacts are not enormously strong. They also appear to take considerable time to occur. For example, a job "enriched" two levels from monotonous/

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*To calculate this intersection "envelope" the ten intersection points for the 5 lines were averaged: mean = 7.9 years (excluding the two extreme intersection points), although the variation is quite large($\sigma = 14$ yrs).

repetitious and low skill work to a moderate intellectual discretion level (job not monotonous, skill above elementary) would be expected to result over a five year period in a participation increase of only 3% (5 x .28 x 2).

It is only when we look at a full occupational career or major shifts in job content that the full implications can be assessed. A maximum 59% (45 x .28 x 4.5)* difference in the probability of leisure participation could occur between the most active and the most passive jobs over an average working life history—the difference between the top and the bottom of the "fan" in diagram 5-2. If our results hold for political activity as well as the Leisure Activity Composite, then significant political consequences are implied. A 59% decline in political participation could transform a democratic society into government by a ruling elite several times over. A positive change of this magnitude would transform a society of political indifference into almost full citizen participation. Furthermore, for a post-industrial society where 58%** of the economy is employed in service production, a 59% difference in services consumed during leisure could easily result in substantial employment changes -- excluding change in related goods consumption.

The errors in our estimates have been compounded by several degrees—

**Applying N.B.E.R. (V. Fuchs) 1965 definition to 1975 Manpower Report of the President.

* Of course the true scale variation is probably more than 4 levels. It is doubtful that the nine cell tables represent the maximum variation in job content. A much greater range than we have measured obviously exists for both psychological job demands and intellectual discretion (where any skill over elementary level is "high"). The use of four cell tables reduced the variation by a third (a 4 to a 2 level scale).

to an extent difficult to estimate. We can only concede that the figures above are obviously extremely rough (but display some consistency). One view of the errors inherent in these calculations would speculate that the randomness of unaccounted-for job changes reduce stronger effects of job socialization that could be discovered with proper longitudinal data. The more common position might be that even the relations we do observe are "spurious" effect, really due to "latent personality direction." We will make an attempt in the next section to measure such a "latent tendency" by controlling work experience cohort analysis for family background, childhood life experiences, and education. In so doing we shall attempt to further narrow the range of plausible alternative hypotheses that could account for the tentative evidence on "job socialization."

5-3b. Other "Age-Related" Effects

We do not rigorously control for the effects of aging in this study. Instead we examined the effects of work experience—a variable highly colinear with age. The separate effects here would be hard to isolate so we cannot exclude the possibility that the associations in Chapter 4 are only the implications of "aging" instead of "job socialization." It must be recalled, however, that what we did find was not just participation rate differences by work experience (or age), but that there were different changes of participation for different people. A very effective way of summarizing these differences was to refer to job content.

There are several significant main effects of age* on leisure participation (Table 5-1). Active Physical Leisure declines as expected, but several other activities increase (non-participation declines): Suburbanite Leisure, and political activity. Thus, "age" by itself does not simply predict leisure participation. Also, the concept of "age" by itself implies no elaborate hypothesis about why some workers should be differently affected by "aging" than others. In order to account for our observations by a theory of "aging," age must be used as a necessary "reinforcing" variable for some other factor -- which must be specified.

In the section below we use marital status and childhood background in an attempt to test such an elaborated "null hypothesis." The age "composites" variables may be described as "life cycle," "personality fulfillment (via job mobility)" and "income dynamics." Table 5-1 shows that the effects of both work experience and age on leisure similar, as expected.*

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* Lundahl, Agneta, op. cit. An analysis of age variations reveals that for all activities except active physical and mass cultural leisure (where the variation is more continuous with age), the major difference in participation rates comes at the under/over thirty boundary. There are some shifts among activities within the factors as well. For example, gardening increases in frequency with age, while visits to summer cottages drops—both within the petit bourgeois factor.

Life Cycle**

To study the differences in leisure behavior over the life cycle we have created a simple four category variable representing marital status and age. We select 30 as a point to dichotomize the age variable for several reasons. In Chapter 3 we found that the correlations among leisure activities were much less stable in the "under 30" population for both men and women. The frequency of participation in several activity categories such as evening social leisure and political participation*** changes rapidly in the vicinity of age 30. Thus, the leisure factors in general become more sharply defined above age 30, and we can speak more correctly of "patterns" of activity. The marital status variable is also more stable over age 30. Marital status by itself manifests significant leisure association with the evening social leisure and the political participation indicators. When both marital status and the age variable are

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*Another aspect of aging, potentially independent of occupation, is physical health. In general we find that leisure participation among working men age 18 to 66 is remarkably constant when controlled for symptoms of severe physical illness. However, mental strain symptoms are highly correlated to physical health.

***Verba, S., and Nie, N., Participation in America, 1972, Harper and Row, New York, p. 148.

** Another reason for controlling "life-cycle" is to reduce the confusing combined, approximately 60% of the male, non-rural working population falls into one category: married, over 30. Married under 30, and unmarried under 30, unmarried over 30 account for 16%, 15% and 10% of the population respectively.

Main Effects of Life Cycle

Table 5-1 illustrates the fact that life cycle variable is associated with substantial differences in leisure participation frequency—especially for Evening Social leisure which may comprise an important component of "courtship" activity in urban societies. For most of the leisure indicators participation drops with age: Intellectual Cosmopolitan, Evening Social, Active Physical and Mass Cultural Leisure. However, political participation increases, particularly for married men, and "Suburbanite" Leisure increases slightly. There are several important interaction effects between age and marital status: most striking is the difference in Evening Social leisure: only 2 % of unmarried individuals under 30 fail to participate, vs. 41.0% for married men over 30.* Another significant age-marital status interaction occurs for Variations in Leisure behavior.

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effects of other "work-like" activities such as housekeeping, child-rearing, and some community obligations which may affect life outside the job according to the same process of "psychological functioning" that we investigate for employed work (Kerckhoff & Bac, 1968). Certain life cycle groups face substantial burdens of both family and employed work. By dividing the population into life-cycle categories by age and marital status, the nature of the individual's primary socially obligated activity should be roughly constant within these categories, and we can test for the effect of employed work on leisure time activity and health.

*"Suburbanite" leisure is much more common for married men over 30 than for unmarried men. Mass cultural leisure is higher for unmarried men under 30 than for any other group.

For married individuals there is no difference in leisure variety under and over 30, but for individuals who are not married, leisure variety is much lower for unmarried men over 30.*

Interactive Effects of Life Cycle

The next question to be asked is whether variations in leisure behavior associated in Chapter 4 with job content variables disappear when controlled by life cycle variables. Table 5-4 shows that in general the reverse is true: the irregular leisure patterns for young and older-unmarried men mask stronger associations between work and leisure for married men over 30 than exist for the full sample (the effects of intellectual discretion strengthen).** The average (b_x) for the active leisure categories increases from 7.2 to 8.5 in Table 5-10.***

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*And somewhat higher for unmarried men under 30.

**The major "axis" of variations, however, shifts somewhat for three of the nine indicators: intellectual cosmopolitan, evening social, and cross-category variations in leisure. Although some interactive effect along the active-passive axis remains, the variation is stronger for the simple dimension of "intellectual job complexity."

***Mass cultural leisure, which displays a complex "saddle surface" form, is not included in the average. However, its characteristic hump also becomes more pronounced for married men over 30. However, some of this increase may be attributed to the higher average level of work experience in this life cycle category.

5-3$_c$. "Personality Fulfillment" (Via Job Selection)

In Chapter 1 we discussed the difficulty of rejecting the explanation (particularly with cross-sectional data) that there is a latent personality orientation which manefests itself through a gradual process of "maturation." Such a factor could account for the work-leisure associations through job selection; yet its full importance could never be detected at once point in time since it is a developmental process.

We attempt two strategies to test for such effects, both based on the assumption that such a process of personality fulfillment should depend on years of experience or "maturation." That is, more experienced people should display a better fit to their "intended selves" than younger people. Of course, job socialization processes would also imply stronger work-leisure associations with increasing experience; so these two explanations are hard to separate.

1) Examining the Effects of Individual Background Within "Work Experience" Cohorts (Preliminary Computations),*

The first test is to control the experience-dependent associations from the last section for measures of individual background that could cause the individual's "job selection" tendencies. Thus we test to see whether the increasing strength of the work-leisure associations remains within subpopulations of both high and low family educational background and, own education.

As a preliminary step we investigate whether there are substantial differences in job content, related to individual background, that change by duration of work experience. For example: "Family Background" may not play an important role for the first job; but over the full occupational career, workers of high status backgrounds may be more likely to "improve" their job circumstances. Table 5-7 below provides a short summary of such "Job Content Mobility" relationships. There is some tendency for "low-status" workers to report more 'passive' jobs with increasing work experience; and for 'high-status' workers to have increasingly more 'active' jobs. However, the effects are not strong (except own high education) and there is a reversal effects for high family educational background. Although these estimates made from cross-sectional data only, there is some evidence of "Job Content Mobility," and a further hint that it may account for some of the work-leisure associations.

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*These computations must be considered preliminary because several variables were not included: Religious Organizational Leisure Indicator is omitted and the "childhood problem" Indicator was not used as a control. Both of these lacunae are being corrected in further computations.

TABLE 5-7

"Job Content Mobility" by Work Experience Cohort-By-Education and Family Educational Background

Sweden Male Workers (Non Rural) 1968 Age 18-66 (n = 1,466)

A. FAMILY EDUCATIONAL BACKGROUND

LOW EDUC.	TOTAL	0-5	6-15	16-30	30+
Passive	51%	42%	52%	47%	55%
Center	32	42	31	34	30
Active	17	16	17	20	15
n =	1080	95	207	358	421
HIGH EDUC.					
Passive	24	21	28	17	32
Center	42	51	42	38	38
Active	34	27	30	46	30
n =	350	71	107	109	63

B. OWN EDUCATION

ELEM. ONLY	TOTAL	0-5	6-15	16-30	30+
Passive	62%	(75)	67%	59%	62%
Center	29	(25)	24	31	31
Active	8	(0)	9	10	8
n =	767	28	125	250	361
ABOVE ELEM.					
Passive	24	26	29	17	23
Center	40	50	41	38	32
Active	36	24	30	44	45
n =	691	140	194	220	137

We test this Job Selection hypothesis in Table 5-8. The table illustrates the effect of controlling for family education, own education,* on the differences in leisure participation rates between workers with active and passive jobs in each of the work experience "cohorts." It does not provide evidence that Job Selection accounts for most of the work-leisure associations -- at least if the job selection process is dependent on family educational background, or own education. However, the tests represent a multilevel analysis which does not have high accuracy and which yields somewhat erratic findings. Two of the estimates are based on obviously non-linear time variations. For both high family education and own education, the work-leisure association first "jumps" from 0-5 years to 6-15 years, and then declines or levels off. If we "average out" such irregularities we find that about 66% of the original experience-dependent variation persists after controlling for these measures of individual background.

TABLE 5-8

Difference in Leisure Participation Rates Controlling for Work Experience Cohorts and Individual Background (Relative Participation; 100 = AVE.)

(Based on Aggregated 4-Cell Tables to Maintain Cell Size)**
Sweden-Male Workers (Non-Rural) 1968 -- n = 1,466

	Full Population	Family Education		Own Education		Average "Partial" (4 Subpopulation)
		Low	High	Low	High	
0-5 yrs.	16.3	22.0	7.7	(-)	11.0	14.0
6-15 yrs.	30.0	37.3	25.0	16.2	36.8	29.0
16-30 yrs.	28.2	32.2	4.4	27.6	21.0	22.0
30+ yrs.	43.1	40.0	36.0	46.5	19.4	35.6
Estimated Variation***	27.6	14.0	27.0[‡]	50.6	- 5.8[‡]	18.1
(Full Scale 45 years)						(66% of original variation)

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*Education and family education of course have not been constant -- but have increased over the years -- making the "time control" issue more complex.

**In order to simultaneously control the work-leisure associations for both individual background and work experience the nine-cell tables must be collapsed into a four cell table (by combining levels two and three on both the psychological job demands and the intellectual job complexity axes); otherwise cell sizes would become too small. Although the sensitivity of the four-cell table is substantially reduced, statistical significance is increased. For the nine-cell table, the passive and active participation rate extremes for the four work experience cohorts are: 19.7%, 40.5%, 35.8% and 59.1%. For the four-cell table these differences are 16.3, 30.0, 28.2, and 43.1 respectively -- about two thirds as large.

***Based on a regression fit of the four points, weighted by the population in each job experience category. Two of the subpopulations estimates have low accuracy.[‡]

The differences between each background sub-population are considerable. Although this analysis is not sufficiently precise to clarify all the implications, the findings do reinforce the observations in section 5-5 that job content is less important in the highly education population. On the other hand, the "Job Socialization" effects may be stronger than previously estimated for workers who have only minimum education. The family educational background findings display greater consistency, but just the opposite relationship: high educational background is associated with stronger "Job Socialization" effects although the difference is barely statistically significant.*

We can conclude that there is evidence for a process of job content "mobility" which is related to individual background, and that this "Job Selection" process does account for some of the observed work leisure associations. However, on the basis of rough estimates made with cross-sectional data it does not appear that "dynamic Job-Selection processes" substantially** account for the bulk of the observed increasing association between job content and leisure behavior with increasing work experience.

2) The Effects of Work Exposure measured by Hours per Week (women workers)

A second test of the "Job Socialization" hypothesis utilizes a group for which exposure to the work place can be separated from years of work experience. Since most all men are full time workers not enough variance on hours per week is present to do this. However, women workers (heretofore excluded in our analysis) provides such a group. There are enough part time and full time workers to allow variation in "exposure" to the work environment without reliance on the work experience measure. We also have evidence to show that the effects of work (at least full time work) on men and women are comparable.*

---

*The standard errors of these estimates (5% and 16% respectively) are about as large as the differences between them. For own education these errors are 2% and 10% respectively.

**Perhaps a greater background effect could be obtained by utilizing a multiple combination of family educational background and own education. The question of their additive significance would then depend on the correlation between family and own education.

Generally, the work-leisure relationships are substantially stronger for full time workers than for part time workers in Table 5-3. With the exception of Intellectual Cosmopolitan and Evening Social Leisure** the coefficients the association between job content and leisure participation is over twice as strong for full time worker as for part time workers ($b_x = 6.8$ full time vs. 2.8 part time). This is possibly the simplest support of our broad hypothesis that it is the "active and passive" content of work that "causes" the work-leisure associations. (The finding for mentral strain symptoms is similar except for sleeping problems.) The fact that the "dependent measure" doubles when the "treatment" doubles -- to use the jargon of experimental psychology -- is one of the simplest pieces of "circumstantial evidence" that job content has some causal influence on life outside the job.

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* Much of the observed differences in adult men and women's leisure behavior appears to be accounted for by work experience. That is, women working full time have leisure (and mental strain) profiles similar to those of men, while women who are housewives only have much greater male-female differences (Table 5-1).

**A high "stress" interaction effect is strongest job content relationship for Intellectual Cosmopolitan Leisure, Evening Social Leisure, and Variations in Leisure. Although analysis using the "Activity Level" job content dimension reveals that the work-leisure associations is stronger (or almost as strong) for part-time workers as for full time workers in these cases, the interaction is clearly stronger for full time women workers. This finding is congruent with the hypothesis that work "socializes" more effectively at high stress than at low stress (Grinker & Spiegel, 1945) and implies the multiplicative relation (job demands x job discretion). The figures below are non-participation rates at high psychological job demands and low, medium, high intellectual discretion -- respectively:

a) Intellectual Cosmopolitan Leisure	Full Time:	59%,	30%,	8%
	Part Time:	54 ,	22 ,	12
b) Variations in Leisure	Full Time:	58 ,	39 ,	17
	Part Time:	54 ,	29 ,	27
c) Evening Social Leisure	Full Time:	33 ,	28 ,	23
	Part Time:	39 ,	22 ,	30

It should be noted that for several activities the strongest work-leisure association for full time women is a high job demands interaction effect; i.e. only when the job is psychologically demanding is high job discretion associated with active leisure and low discretion associated with low participation (and high mental strain).* This deviation from the "active-passive" pattern may be the result of women's housework responsibilities added to job demands which increases the significance of a heavy work load.

Table 5-3 allows inference about level of leisure participations as well as rates of change. One interpretation sheds an interesting light on the Job Selection mechanism. For most activity categories full time women with passive jobs are more passive in their leisure activity than part time women with passive jobs. We can imagine an "active personality" that would select full time work (and active leisure). But it is harder to believe that such an "active" women could also select more passive jobs and more passive leisure than part time women. To postulate a job mobility mechanism to account for the women's findings above would require rather inconsistent choices on the part of working women.

A complete anlaysis would require full employment history data, with which to judge whether women now working part or full time have always been doing so. Again, we do not have such data. We do know, however, that the distribution of work experience duration is similar for both part time and full time in each work experience group.**

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*See footnote previous page

**In the cross-section there is little relative difference in the work force experience durations for workers who are part time or full time currently (over 1,800 hours last year):

	Part Time	Full Time
0-5 years	20%	23%
6-15 years	31%	36%
15-30 years	32%	31%
30+ years	16%	10%

5-4 Community and Social Relationships

We have two avenues for investigation of the impact of the community structure of social relationships on leisure activity that partially circumvents the problem that no data exists in the Swedish survey on social networks or specific cultural traditions. Data* on the types of social relationships that are most common for each worker are available, and we also have data on the urban scale of the respondent's community.

a. Relationships with Friends and Relatives

The importance of the kinship structure on the nature of leisure time usage is well documented (Young and Wilmott, 1957; Bott, 1956), as is the association between friendship ties and leisure activity (Langner and Michaels, 1963; Parker, 1971). Family ties may affect both choices of job and leisure. The presence of a strong, extended family network implies, almost by definition, an increase in family-oriented leisure, and might therefore affect participation in the external goal-oriented macro-social leisure activities we focus on. Although friendship on the job could also have a significant impact on our hypotheses (Caplan, et al., 1975), we do not have separate data on frequency of relationships at work.

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*Definition of Relative Visit and Friend Visit Measures
These measures are constructed from a cumulative scale of responses to two questions: "How often do you visit friends? How often do friends visit you?" Answers: never, sometimes, often. (These are the same scales as for most other leisure questions. The time period is the last 12 months. "Often" means more than once a month if respondent questioned.) Very few respondents answered "never" to both of the questions; thus the low level of friendships represents "sometimes" visits in response to one question and "never" to the other. The high level represents "often" for both questions, or "often" for one and "sometimes" for the other. The relative visits question is coded in the same manner.

Main Effects and Interactive Effects--Friend Visits

Table 5-1 hows the impact of frequency of friend visits on leisure participation rates. The impacts of visits with friends is associated with major differences in participation level for Evening Social leisure, Mass Cultural leisure, and of Variety in leisure behavior. Apparently a greater frequency of friendship contacts broadens one's horizon of leisure participation, and this relationship is generally continuous (but not for political activity).*

The correlations between friendships and job content are low (for psychological demands and intellectual discretion respectively r = .05, 08), and controlling for levels of friendship leaves the work-leisure associations basically unchanged. The relationship becomes stronger for several activities.**

Mass Cultural Leisure and the five active leisure indicators increase with friendship frequency in spite of their opposite associations with job content. This si further evidence that social relationships with friends represent a dimension of behavior independent of the job content categories. This independence would allow introducing both visits with friends and job content into multivariate regression to predict participation and should result in accounting for more of the variation in participation.

Main Effects -- Relative Visits

Visits with relatives reveal a different pattern. For most activities, the variations are substantially smaller than for differences with frequency of friend visits.* It is the frequency of surbabanite leisure that shows the strongest association to frequency of relative visits. The job content co-variations with relative visits is also small (r = .08, .07, respectively).

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* For the political activity indicator, participation remains independent of friendships except at the very low levels of friendship, when participation drops considerably.

**Intellectual composition leisure; the picture is confusing for mass cultural leisure.

Interactive Effects -- Relative Visits (Table 5-10, 5-11)

The most striking differences between the effects of friend and relative relationships occur in their mediation of the job content-leisure associations. The specific impact of relative visits on the association between job content and the variety of leisure indicators is complex and interactive (Coleman, 1964). In general the associations observed in Chapter 4 are most characteristic of a medium level of relative visits. For one group of activities the work-leisure associations drop with increasing relative contact. Submergence in the kinship network seems to overshadow the mechanisms of "social-psychological functioning" related to the job. This is true for both elite and mass political participation, and for religious organization participation. All these activities reflect significant social network relationships between the family and the community. Our work and leisure picture may apply to the highly mobile urban** society of individualistic, rather than familial goals-where "weak ties" define the social structure and "friendship" is the major source of social support (Litwak and Selenyi, 1969).***

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*Again it should be noted that leisure relaxation activities and family oriented leisure, poorly measured in this data, may well display a stronger relationship for relative visits.

**These findings may be related to our earlier observation that the separation of work and leisure into distinct behavioral spheres depended on non-rural location. The breakdown of kinship ties that is widely observed to occur in the transition from rural to urban societies may be frozen into the cross-sectional differences in kinship strength that exist in modern industrial countries.

***Unfortunately, this inexact data prevents us from measuring other important questions as whether it is "unrewarding" work, or the nature of the family structure (Young and Wilmott, 1973, p. 271) that leads to home-centeredness (Wilensky's "privatized" leisure). We can also not determine whether a socially homogeneous community (Lipset, 1960) sustains a higher level or a different kind of leisure.

Irregular interactions occur for other leisure activities. For example, the work-leisure sensitivity displays an inverted "U" shaped relationship to frequency of relative visits for Variations in leisure, and evening social leisure. Active physical leisure and "suburbanite" leisure participation are more sensitive to job content variation for workers with many relative contacts.

b. Urban Location

One of the initial premises of this work-leisure investigation was that the analysis should be limited to the non-rural population (p. 37). We also found, investigating frequency tables (Lundahl, 1971) for leisure activities, that the greatest changes in participation rates appeared to occur at the boundary between purely rural areas ("Glesbyg")--and small towns (over 100 population). We cannot assume, however, that leisure patterns are constant with increasing scale of urbanization, even in the non-rural population. In Sweden, for example, a study of municipal operating expenditures* for leisure facilities such as parks, sport and bathing areas, theatres, concerts, and community centers, vary almost proportionately with urban scale.* Thus one hypothesis about the impact of urban scale would be that additional public provision of leisure services might reduce the association between occupation (at least via economic rewards to work) and leisure participation in urban areas. On the other hand, urban life, with its greater opportunities for outside the home entertainment at the community scale, might lead to a stronger definition of life style in terms of leisure behavior, and strengthen the association between job content and leisure.

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* Per capita yearly expenditures for cities of over 50,000 is (1968) on the average 170 Skr.; towns of 50,000 to 10,000 spend 120 Skr.; and towns of population under 10,000 spend 40 Skr. Play schools for children display a similar pattern of variation. (Dollar equivalents for 1968: $1 = 5.2 Skr. Source: Kommunal Finance 1970. Swedish Annual National Statistical Reports.) Capital Expenditure levels are roughly constant (parks, theaters, bathing areas, etc.) for cities of over 10,000. Under this level they decline to 1/2 or 2/3 the large community level.

Main Effects of Urbanicity

Table 5-1 illustrates the difference in rates of leisure participation for the three major metropolitan areas of Sweden--Stockholm, Göteborg, Malmö--vs. small urban areas. The variations are not large: urban areas favor participation in intellectual-cosmopolitan leisure, "suburbanite" leisure, and evening social leisure, and small towns favor active physical leisure, mass cultural leisure (including auto excursions), religious participation, and mass political participation. There are also no strong associations between urbanicity and our job content measures ($r = -.02, .09$).

Interactive Effects of Urbanicity

There is an equally mixed picture of the strength of work-leisure associations at different urban scales. In several cases the combination of large and small urban areas masks a stronger job content effect in one subpopulation: it is in urban areas that workers with heavy, oppresive jobs are differentiated from those with leisurely jobs in terms of mass political participation. The job content-leisure variation in urban areas is 42 percent, and in smaller cities it is 13 percent. The findings in general however show that the "style of leisure" varies somewhat between big city* and small town, but the total overall change in levels of activity and sensitivity to work environment factors is only moderate:

a) The more traditional and possibly elite status activity categories (such as intellectual cosmopolitan leisure, religious participation, and elite political participation) display more variation by active-passive job content in small towns.

b) The activities of broad and current appeal show greater variation by occupational attributes in large urban areas, such as suburbanite leisure, evening social leisure, and mass political activity.

Summary of Community and Social Relationship Impacts

Social relationships with friends and relatives have substantial but different effects on the work-leisure association. There is substantial covariation between frequency of friendship contacts and overall leisure participation rates, but this occurs independently of the job content relationship. The rates of leisure participation do not vary greatly with frequency of relative visits, but high levels of relative associations interactively alter the character of the work-leisure associations. If we consider "relative visits" a rough measure of the strength of extended kinship ties, then the prevalence of the nuclear family in modern (urban, industrial) society substantially changes the impact of the occupational system on the patterns of life outside of work.

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*One problem is that the large urban area sample is drawn from only three municipalities, and the unique cultural traditions of these areas may overshadow the common features of their large scale.

Although it may be difficult to separate the effects of urbanization from the changing strength of the extended family in industrial societies (Portes, 1973), the urban scale of the respondent's community does not appear to have consistently strong impacts on the work-leisure associations. It must be remembered that we have eliminated rural communities from this study.

Table 5-10: Impact of Community Social Relations and Social Status Variables on the Work-Leisure Association (Job Content Effects Summarized in Terms of Activity Level Variations: 'b_x' is the change in probability of participation per unit change in activity level (a four unit scale).) $\bar{L}$ = category mean; s_e = standard error.* Swedish male workers (non-rural), 196 , age 18-66 (n = 1466)

	Variety	Active Leisure						Non-Active Leisure	Political Activity	
							Compos.			
	Variations in Leisure b_x $\bar{L}$ s_e	Intell. Cosmop. Leisure b_x $\bar{L}$ s_e	Active Physical Leisure b_x $\bar{L}$ s_e	Evening Social Leisure b_x $\bar{L}$ s_e	Suburbanite Leisure b_x $\bar{L}$ s_e	Relig. Organiz. Leisure b_x $\bar{L}$ s_e	Active Leisure b_x $\bar{L}$ s_e	Mass Cultural Leisure b_x $\bar{L}$ s_e	Elite Polit. Activity b_x $\bar{L}$ s_e	Mass Polit.** Activity b_x $\bar{L}$ s_e
Full Sample	-11.2 6 20%	-11.7 8 30%	-4.9 6 27%	-3.8 8 30%	-10.5 3 35%	-5.2 5 54%	-7.2 6 35%	+2.8 4 58%	-14.0 4 45%	-6.0 3 46%
Life Cycle										
Married over 30	-10.6 10 17	-13.9 14 32	-6.7 8 29	-6.6 6 43	-10.0 9 27	-5.2 6 50	-8.5 9 35	+3.2 5 62	-13.6 9 41	-5.4 5 37
Relative Visits										
Isolated	-8.4 11 30	-12.2 12 36	-.9 10 29	-4.4 11 34	-8.8 4 51	-8.7 8 67	-7.0 9 43	+2.3 12 67	-19.6 9 56	-4.9 8 53
Normal	-11.4 7 19	-10.1 15 31	-6.3 9 28	-6.0 11 28	-9.0 4 37	-4.0 5 54	-7.1 9 36	+1.8 6 60	-13.4 4 46	-8.7 4 46
Gregarious	-6.7 11 15	-10.7 10 29	-6.9 9 19	-3.9 10 28	-11.5 6 27	-3.2 9 46	-7.2 9 30	+6.0 5 47	-9.9 9 43	-2.9 7 41
Social Class										
Working Class	-6.8 5 22	-7.4 6 40	-6.6 6 29	-2.4 11 32	-5.3 5 45	-1.5 7 60	-4.6 7 32	+0.0 6 54	-8.8 7 58	-8.1 7 42
Income										
Lower 4 deciles	-8.2 8 22	-9.2 9 33	-5.1 6 29	-4.6 13 24	-5.6 3 48	-3.5 6 57	-5.6 7 38	+0.0 6 44	-10.4 6 58	-6.3 8 54

*The hypothesis that there is some statistically significant difference between the "active" and "passive" jobs is significant at the following levels: The confidence level is p = .0001 for (S_e) less than (b_x); p = .01 for an $(s_e) = 1.8(b_x)$; p = .10 for $(S_e) = 3.1(b_x)$.

**Variations recorded along the unresolved strain scale (4 unit scale, also).

Table 5-11: Job Content by Leisure (Non)-Participation for Selected Subpopulations and Selected Activity Categories

Swedish male workers (non-rural) 1968, age 18-66 (n = 1466) (percent)

Intellectual Job Complexity	RELATIVE VISITS Psychological Job Demands VARIATIONS IN LEISURE			LIFE CYCLE = married over 30 VARIATIONS IN LEISURE			SOCIAL CLASS = working class VARIATIONS IN LEISURE			FAMILY INCOME (disposable) lower 40% VARIATIONS IN LEISURE			WAGE (lower 50%) VARIATIONS IN LEISURE		
	None	Hectic	Hectic& Demand.	Lo		Hi	Lo		Hi	Lo		Hi	Lo		Hi
Monot./Repetit. & Low Skill	50	27	22	32	29	29	37	35	22	33	30	39	38	32	33
Low Skill (Not Monot.)	26	25	19	27	28	15	26	24	26	26	24	23	29	21	21
High Skill (Over Elem. Ed.)	14	15	8	10	11	10	19	20	14	16	16	9	13	15	13

	Moderate Relative Visits			ELITE POLITICAL ACTIVITY			ELITE POLITICAL ACTIVITY			ELITE POLITICAL ACTIVITY			ELITE POLIT. ACTIVITY		
Lo	17	22	39	70	56	57	83	65	56	77	70	78	79	60	55
	20	16	10	55	52	40	65	54	49	67	56	42	64	55	47
Hi	16	12	9	22	28	19	49	56	49	59	45	41	45	47	40

Many Relative Visits

	MASS POLITICAL ACTIVITY			MASS POLITICAL ACTIVITY			MASS POLITICAL ACTIVITY			MASS POLIT. ACTIVITY		
Lo	40	33	20	47	51	24	53	51	56	42	50	30
	37	34	33	47	39	31	61	46	32	49	38	33
Hi	45	41	42	62	52	30	63	65	56	53	53	49

5-5: Status: Class, Income, Wage, Education

The majority of the "status" variables, as they are measured in the Swedish data, have a different logical status in our analysis than the "background"* variable reviewed earlier. Social class, income, and wage are outcomes or attributes of present occupation, much like the job content indicators. They represent an alternative causal path from occupation to leisure behavior.

Thus it is not surprising that these measures are highly colinear with the job content indicators (Table 5-2) and introduce substantial complexity when we try to separate the leisure participation effects of the status variables and the job content variable. As an example of this colinearity, the Swedish social class categories can be predicted in a regression analysis rather accurately** from the raw job content measures. The "active-passive" composite that is used to represent job content effects is even more highly correlated to social class.*** Indeed, one might suggest that the social class categories are a "blanket" measure of the more detailed information in the job content and wage indicators. Education is also quite colinear with Intellectual Job Discretion and Psychological Job Demands (r = .64; .10). Family income is correlated (r = .24; .26);* and wage** (employees only) is so highly associated that our multilevel crosstabulations are incomplete in some high wage cells (r = .57; .28 respectively).

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*Education is generally considered a component of status (Blau and Duncan, 1967), but of course is primarily a "prior" aspect of the occupational career. Of course genetic factors, if they are important, are obviously "background" factors. Family social status is also almost entirely a "prior" cause when considered in light of present occupation. Kohn (1969), however, examines anticipatory socialization operating through occupationally related parental values.

**Lower class membership $r^2 = .62$; (average of two random half samples (n = 245) men age 30-49 in our sample).

***60% of working males in social class I (12% of the population) have jobs described as "active"; for social class II, the figure is 30.5%, and for social class III only 5.4%. This colinearity is stronger for working males in our non-rural sample than for the full working population. Using the "physically active" definition (high physical job demands and high schedule freedom at the work place), these percentages are 4.4% social class I, 20.2% social class II, and 19.2% social class III.

To assess the impact of the status variable in light of these high correlations we will adopt a dual strategy: in the first part of the analysis we will observe the work-leisure association within that subpopulation of each status variable where the covariation with leisure participation is constant or almost constant. These results are displayed in Table 5-10/11. In the second step we try to apportion the variance by applying multivariate regressions to the (logit-adjusted) participation rates for family income, education, and to the extent possible, for social class. We then discuss how the observed variations conform to the theories about how participation should vary with "social status" in Section 5-5d.

We have already found one large low status population where the leisure covariation is zero by virtue of the fact that status is constant: i.e. education is elementary school for 52% of our sample. The social class measure provides a similar group: the working class (social class III) comprises 50% of the sample. For income and wage, isolation of a subgroup is somewhat more difficult: leisure participation appears to be more constant with respect to wage and income at middle ranges (see Diagram 5-3, section 5-5b).* However, we will risk some error, and select the lower "half" of the income spectrum so that we can perform a consolidated "low status analysis" of the work and leisure associations.

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*The correlations for constant age (30-49), full time workers only (lower half of Table 5-2) are higher (r = .63; .32).

**"Wage" data is not available for self-employed individuals, so this variable covers only 84% of the full male sample (n = 1466).

The Status Variables

A. Social Class Categories

The measurement of social class position available in the Swedish survey represents an attempt to locate in individual in a unidimensional national status hierarchy. Its proponents claim that the scale has independent stature as a measure of overall social position, although the class** positions specified are rigidly tied to specific occupational categories. No recent survey*** stands behind the Swedish orderings;

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*There are two leisure variables that are not constant with respect to wage and income in the lower half of the economic distributions, notably Evening Social Leisure, which decreases with increasing economic resources, and Suburbanite Leisure participation, which increases (Table 5-1)—somewhat offsetting effects. Both political participation indicators do vary irregularly with wage and income.

**The following coding instruction rejects a limited occupational status interpretation of the result: "With each coding decision, it should be borne in mind that the general perspective according to which the decision should be made is less that of occupational classifications and economics, than social situation. That is, the main weight is definitely not always determined by an individual's work situation. The goal is more that the person be located in that social level to which he in a social manner can be considered to belong." P 0725 Dokumentation Levnadsnivaondersokningen 1968.

***Often status scales are determined by empirical prestige rank. Blau & Duncan's derivation of a similar social status scale for the United States relies on interviewee's comparative ordering of the prestige of people in different life situations as defined by occupation. P. Blau & O.D. Duncan, The American Occupational Structure, 1967.

instead it is a historically "given" scale used in population research since 1911 which is available for application by social scientists (main categories). Altogether 37 subcategories exist but it is not clear that the intermediate positions can be used as a mathematical scale:

Social Class I

Managers, high level public servants, free professionals.

Social Class II

Small businessmen, farmers, foremen, office workers, middle level public servants, teachers.

Social Class III

Small farmers, workers and assistants in private industry, workers and assistants in public industry.

With only three categories, the Swedish social class variable is less sensitive than other measures of social status which have been developed, such as Duncan Socio-Economic Status Class, which vary more or less continuously from the top to the bottom of the status hierarchy. One early conclusion of Duncan's work is that occupational "prestige" rankings empirically gathered from personal interview data can be estimated ($r^2 = .83$) from information on the educational level and income of the occupation.* The discussion below dissects the S.E.S. status concept into a family income, and an education component, and uses these as alternative "status" variables.

Family Income (Disposable)

This variable is a sum of all taxable income for the respondent and his spouse; plus their income from all transfer payments (welfare, housing support, child support, sick pay, unemployment insurance, study assistance); and income from inheritance, lotteries, etc. From this sum is subtracted actual tax payments. This variable is transformed into logarithmic form, and used as an interval* rather than continuous variable.

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*O.D. Duncan, "A Socioeconomic Index for All Occupations," in Reiss, A.J. (et al.), Occupations and Social Status, Free Press, Glencoe, 1961, pp. 109-138.

Wage Per Hour

This variable is the sum of all earnings from employment (salary, wages, tips, bonuses) divided by actual working hours. This variable is not computed for self-employed persons. This variable is transformed into logarithmic form, and used as an interval* rather than continuous variable.

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*It is regrettable that more intervals were not chosen, and that the scale splits occasionally occurred in impractical locations (i.e. the lower 6% of wages). The intervals are presently being recomputed to reflect either a "quintile split" or a 15%, 20%, 30%, 20%, 15%—"extreme-ends sensitive" distribution: but these computations have not arrived at present. The splits noted in Table 5-1 are:

Family Income:	15%	23%	47%	14%	
Wage:	6%	43%	29%	9%	(13% self-employed)

5-5 a, The Work-Leisure Association in the Low Status Populations -- Table 5-10 and 5-3

Working Class

The job content-leisure associations generally remain strong within the working class but the status scale clearly has an effect. In Table 5-10 the unit variations fro the composite Active Leisure indicators drops slightly from 7.2% to 4.6%.* The Variations in leisure indicator continues to covary strongly within the working class; unit variation is 6.8% vs. 11.2%.**

There are several special implications of "working class" membership that show clear discontinuities in variation confirming the existence of a "boundary" between working and 'upper class activity patterns. We find evidence in the sections below that these discontinuities occur for subdivisions of the population by family income and education as well as occupational social class. These subdivisions considered jointly do indeed reinforce the concept of a comprehensively disadvantaged segment of society, particularly with respect to several life outside the job indicators: Mass Political participation vs. Elite Political participation, and Mass Cultural Leisure.***

The strongest example is mass political activity. In the working class the difference in participation rates for individuals with "heavy" and those with "leisurely" jobs is 8.1%, while in the full population it is only 6%. Thus, mass political activity as a form of protest* is more "potent" within the working class where the tradition of working class political efficacy in Sweden supports it.** The job content covariation for elite political activity, by contrast, drops sharply in the working class to below 2/3 of its full sample level. The covariation is stronger for mass political participation in the working class and for elite participation in the "upper class" by ratios of about 2:1 . The joint conclusion of these findings is that there is a clear class effect*** that interacts with job content differences in the field of political activity.

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*The Suburbanite Leisure and the Evening Social Leisure covariation drops to about half of its full sample level, and the Active Physical Leisure covariation increases.

***This applies to some extent to religious organization participation.

**Remember that to find the level implied a "logit" adjustment must be made for variation in leisure.

b. Low Education (elementary education only—7 years - 52% of the sample)

These findings are completely discussed in Section 5- 2. To recapitulate, the work-leisure covariations for the active leisure composite**** drops slightly from its full population value: 7.2% to 5.7%. The political participation indicators display only a moderate drop in covariance with low education as compared to the full sample. This is a departure from the clear class interaction we discussed above. "Class" with respect to political participation appears to be more an effect of occupational class than education.

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*Controlling for intellectual complexity, the variation in mass political participation by psychological job demands is 23% in the working class vs. 15% in social class I & II.

**Scase, Richard, "Industrial Man, a Reassessment with English and Swedish Data," British Journal of Sociology, June 1972, p. 216. See also Milbrath, L., op. cit., p. 127. Verba, S., and Nie, N., op. cit., pp. 159, 340. Similar evidence in the United States is that black "group consciousness" accounts for an independent increase in political participation.

***As we saw in Chapter 4, even the "reason" for the participation changes; for mass political participation it is "unresolved strain" that is the best predictor, for elite political participation it is "activity level" (as for most other leisure behavior categories).

****Within educational experience level, the job content associations remain relatively constant, but inspection of the 9-cell tables shows several interactions: For religious participation, there is a strong high intellectual job complexity interaction at low educational level, and for mass political activity, where the heavy-leisurely job association becomes primarily a low intellectual job complexity interaction.

Family Income (lower 37% of the sample)

The job content-leisure assocation remains generally strong within low income populations, according to Table 5-10. The average unit variations in job content for the active leisure composite drops slightly from 7.2% to 5.6% for the low income population. Variations in leisure also covary somewhat less with job content in the subpopulation. A clearer difference, however, appears for "suburbanite" leisure which is significantly less sensitive to job content variations in the low income population.*

There may be a limitation in the "lower status" political participaion style we discussed above. The significant association between mass political activity and workers who have heavy, oppressive jobs evident in the upper six deciles of the income distribution. In the lower 37%, participation shows a smaller (see Table 5-11) and irregular** association. This "disappearance" of covariation is particularly surprising in view of the correlation between working class status and family income (-.25).* Neither the low wage population, however, nor the low education population shows a similarly strong "disappearance of class effect" that the low family income population does. Perhaps this is not surprising since wage and education are more strongly correlated to working class status than income (r = -.60, -.51).

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*Evening social leisure displays extremely irregular effects with income and stronger covariation at low wage. Religious participation and active physical leisure display more covariation. Mass cultural leisure displays a very irregular active-passive variation at lower income levels (a barely significant relation). Only at higher income levels does the curious 'saddle shaped surface"of the full population manifest itself. One explanation of this unusual relationship may be the inclusion of weakly related "auto excursions" on the mass cultural factor, which has a different impact for high and low income populations. At lower levels of income, high participation by individuals with passive jobs may be due to magazine reading and "window shopping" among a group with low auto ownership. At higher income the effects of auto ownership may be more significant.

If we can believe the family income findings, in light of the class and education results, two conclusions follow. First, even the "working class cultural" tradition does not provide an alternative channel of political expression for the disadvantaged worker unless income is above a basic minimum level. Secondly, it suggests that the crucial economic determinant of participation level is the total financial resources available to the worker (family income), instead of his wage per hour.

Summary

In general we find that there is an overall decline in the strength of job content-active leisure covariation when we examine this association within low status subpopulations in Table 5-10. Although this decline is broadly applicable—across all but political leisure categories, and using any of our four "status measures"—the decline is slight (about 26%) and yields a "status-purged" estimate of job content (b_x) participation change of about 5.3% (@50%). The Variety in Leisure indicator displays the same moderate decline in work-leisure covariation.

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*For male workers age 30-49 working full time (average of 2 samples, n = 252). For the full sample income correlations are generally lower.

**Although Table 5-11 shows a b_x of -6.1 (about normal) in the nine cell table (5-10), we find very little cell to cell variation - except for *one* point (32%).

There is also evidence for social class boundaries in the job content-leisure associations. There are discontinuities and "reversals" of political participation style and sensitivity between the working class and upper class. These differences persist, in moderated form, when "social status" is measured by education or by family income. In conclusion, we do not find that the work-leisure associations of Chapter 4 are a "spurious" effect of status, at least low status sub-populations – but the relative magnitude of the job content and status effects remains untested.

5-5b: Assessing the Relative Contributions of Job Content and Status to the Work-Leisure Associations

The overall conclusions above may create the impression that social class, income, education, and wage are unimportant contributors to the leisure participation rates. The univariate status-leisure associations in Table 5-1 show that this is definitely not the case. Indeed, if we examine the differences in participation rates for the highest and lowest status categories we find differences, comparable in magnitude to the variations observed in Chapter 4 for job content:

Table 5-1 a: Differences in Non-Participation for Status Variables (from Table 5-1)

	Composite* Active Leisure		Variations in Leisure	
	Lo	Hi	Lo	Hi
Social Class	42%	19%	25	4
Family Income	38	25	24	10
Education	41	16	25	4

The variation for education and social class in Table 5-1 are at least monotonic, if not linear (there are nevertheless some important differences among the indicators concealed within the active leisure composite).**

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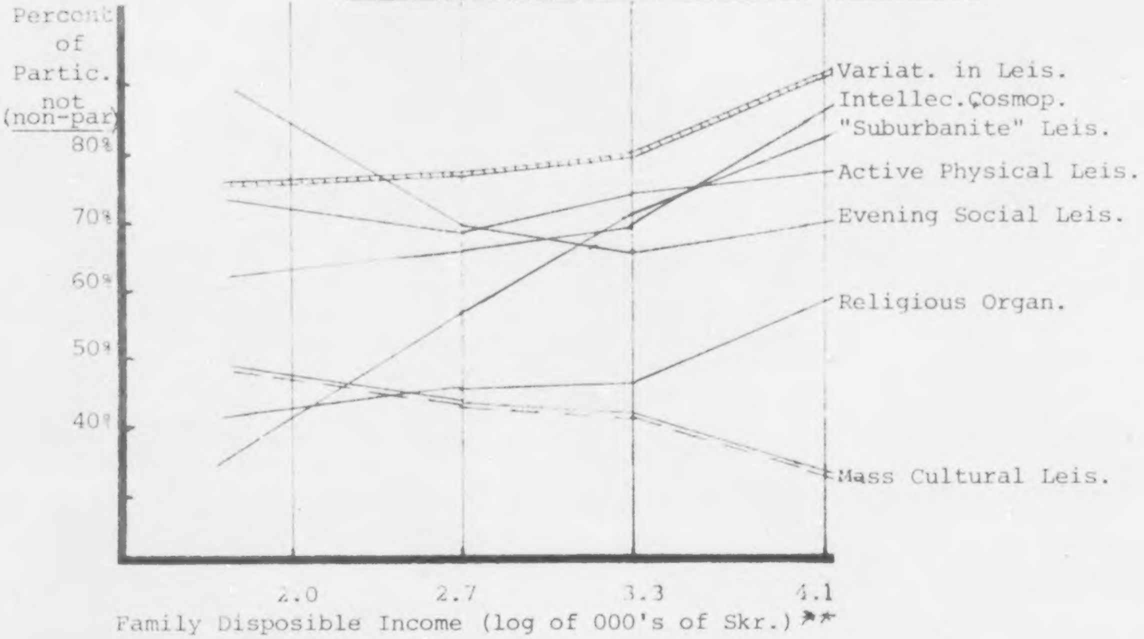
*Corrections applied for "logit-type" distortions before averaging.

**Examination of participation rates for each level of the education variable confirms several expectations about the impact of educational experience on leisure activity. Not only does educational experience strongly affect "intellectual" use of leisure time, but it has little effect on "physical" leisure pursuits—an effect which is masked in the full population. Another finding is that "variations among leisure activities" increases strongly with increasing education (faster than for the economic

Wage and especially family income display such irregular relationships to leisure and political participation that it is advisable to display them in graphic form:

Diagram 5-3: Leisure Participation by Income



There are several instances of "reversal": evening social leisure is more frequent among the lowest income category (perhaps an age effect), and engagement in mass political activity reverses direction midscale. In general these "reversals" are not consistent across status measures and leisure categories. For mass cultural leisure, however, participation is lower at higher status levels for all conventional status dimensions. Separating the effects of family income* and job content is made simpler

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variables). Evening social leisure, active physical leisure, and religious participation are relatively constant. Mass cultural leisure and mass political participation both display a decline with increasing education; the mass political activity manifests this decline in spite of the fact that higher education generally means higher income.

*Note: only 4 divisions; a graduated quintile is now being run.
**(2.0 = 7,500 Skr; 2.7 = 15,000 Skr; 3.3 = 27,000 Skr; 4.1 = 37,000 Skr, 1968)

by the fact that leisure participation exhibits major "plateau" effects and "reversals." In general, family income has a major impact on all participation rates in the highest 14% of the income distribution.* In this upper section of the income distribution the family income and job content effects are so colinear that their impacts cannot be separated. Their is external evidence from income dynamic research (Erickson,I,1971; see Section 5-Eq, p.275) that at this upper level income is the determining factor in changes of participation. Furthermore, all** the participation indicators increase with income in this range—as the simplest economic theory suggest they should. Such economically predictable variation is not the case at lower income levels. We will discuss the implications of these theoretical discrepancies further after the following section.

Multivariate Regressions

We will perform regressions on the Active Leisure Composite composed of Intellectual, Cosmopolitan; Active Physical; Evening Social; Religious Organizational, and "Suburbanite" Leisure.

We do not include a multivariate regression with wage since the self-employed workers are missing from our sample. The social class measure presents difficulties both because of colinearity, and the very small size of the upper social class (I) category—12% of the population. Therefore we do not employ multivariate regressions here either. However, a rough attempt to allocate variance is made by relating the participation differences for workers with active jobs in all three classes--to the participation differences for working class job holders with active and passive jobs (not a "symmetrical" test). Using a "composite-composite"* leisure indicator, the job content differences account for a variation in participation of 23%, the social class indicators a variation of 16%.** For mental strain indicators job content is an even better predictor: job content accounts for 90% of the covariation with social class (equally high for other status variables).*

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*This variation appears to be more continuous for "petit bourgeois leisure" and elite political activity. Even for these activity categories the difference increases substantially in the high income category.

**Except Mass political participation, which does increase with family income up to this point—where a "class" barrier appears to "stop" the increase. Mass Cultural Leisure, discussed above, also drops.

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*The consistent behavior of the job content-leisure-status relationships allow us to form a "composite-composite" of all nine activity indicators in which the qualitative differences in variations (sign, best predictor) are adjusted according to the "standard" implied by the "active leisure variables, (variations in leisure, and elite political activity): the variation in mass cultural activity will be reversed, since this leisure activity decreases for each status variable and for job content, activity level. Variations in mass political participation will be recorded along the "unresolved strain" diagonal identified as its "best predictor" in Chapter 4 (instead of the activity level diagonal). Here, again, status changes either reinforce or eliminate job content covariations with mass political activity primarily along this dimension.

**These differences have been corrected for "logit-type" distortions, but there are other sources of inaccuracy. The high correlation between job content and social class means that the average leisure participation differences between social class categories (or job content categories) in the full population will be larger than these "decomposed" variations.

For the multivariate regressions we select the lower 86% of the family income distribution and the full population for the regression with income and job content. For education we perform the regression in both the full sample and in the "higher education" subsamples. In the elementary school sub-population we "concede" all variance to job content since Δ education = 0. The results of these regressions are reported in Table 5-12 -- again in terms of the full scale variations they imply (active to passive job constant, low to high income -- at the 50% point).

Table 5-12 shows that in the lower 86% of the income distribution most of the occupation-related variation in leisure occurs through the "activity level" of the job and not the family income of the job holder. The full scale variations in probability are 24% and 8 % respectively. It must be noted that a part of the poor showing of income is due to unpredicted "reversals" in the signs of variations between categories.

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*Mental Strain Findings

The average difference between symptom levels for workers with leisurely jobs in social class III and those in class I is only 3% (@ 50%). Within social class III the difference in symptom levels between workers with leisurely and those with heavy jobs is 27% (@ 50%). In summary, the "job content" model predicts 90% of the joint variations in probability of tiredness, sleeping problems, depression, stomach problems-anxiety, dizziness-high blood pressure, and aches and pains in back, hands and arms. Again the greatest variations occur between individuals at the extremes of the job content-social class spectrum—those with leisurely jobs in social class I, and those with heavy jobs in class III. The average symptom rates for six composite indicators are 14.0% and 35.4% respectively.

Table 5-12: Multivariate Regressions, Job Content and Family Income--Education on the Active Leisure Composite
Full scale variations* = $b_x.x$ @ 50% (or appropriate range of variation)

I. Job Content (B_1) and Family Income (B_2) (log of 000's Skr.)

Probability of Non-Participation (@ 50%) =	L_o	$+ B_1.X_.$	$+ B_2.X_2$	b_1	b_2 standard errors
1. Lower 85% of Family Incomes	52.6%	-23.8%	-4.6%	-6.0	-2.7
2. Full Sample (n = 1,466)	52.0	-23.1	-10.1	-5.8	-4.8
3. Lower 37% of Family Incomes (from p. 265)	51.6	-22.4	(no test)	-5.6	(no test)

II. Job Content (B_1) and Education (B_2) -- yrs. over elem.

	L_o	$+ B_1.X_.$	$+ B_2.X_2$	b_1	b_2
1. Elementary Education only (from p. 214)	51.7%	-22.8%	0%	-5.7	0
2. Full Sample	50.1	-19.4	-17.0	-4.8	-2.2
3. Over Elementary Education only	42.1	-13.8	-9.2	-3.4	-2.3
4. Over Jr. H.S. only (top 30% of population)	33.1	-7.4	-4.4	-1.9	-2.2

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*1. Full scale for job content is from the "passive" cell ("1", 4% of population) to the "active" cell ("5", 21% of the population).

2. Full scale variation for family income (log) is from (7,500 Skr. in lower 14% of population) to (37,000 Skr. in upper 14% of population).

3. Full scale variation for education is from elementary (7 years--52% of population) to academic H.S. or some university (13 years--10% of population).

Within the full Swedish population, education accounts for about as much of the variation in leisure participation as job content, 17% to 19%. The importance of job content declines (b_x) with increasing education. Two processes might explain this: first at the highest levels of education few workers have passive jobs; (it is hard to find independent variation by job content), thus the education system serves as a means of allocating individuals to the desirable, "active" jobs. The second mechanism is that the socializing functions of the work place (evident when education is elementary school only) are performed at school for individuals with many years of education and correspondingly shorter occupational histories.*

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*Ph.D. candidates, for example.

5-5c: Income Dynamics

The one remaining variable in our control group that is simultaneously related to both work and leisure and that might cause changes over time in this association is family income. This variable, unlike education, is not a constant for life but displays a significant and changing "life history." Fortunately, this family income life history has been tabulated using time series data over a 16 year period for a substantial subgroup in the same Swedish sample used in this study (Erikson,I,1971). The conclusion is that the relative relationship between income levels for all occupations in social class II and III remained relatively constant. It is this group, representing roughly the lower 89% of the income distribution, for which we find that most of the leisure participation differences were due to job content and not due to family income.* Thus any changes in work-leisure association that we attribute to job socialization are not likely to be the spurious effect of income dynamics.

At higher income we suspect that it is indeed increased economic resources that account for the substantially higher leisure participation rates. The Swedish income history data supports this speculation: members of the highest occupational social class have income that rose substantially in comparison to incomes in social class II and III during the period from 1951 to 1966. Thus, we have both cross-section and (inferential) longitudinal data that lead us to believe that economic factors play a substantial role in work-leisure carry-over in high income groups.

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*That finding was based on the lower 86% of the income distribution; see p. 273.

5-5d: Interpretation of the Findings

Education

We can accommodate the apparently disparate findings that education accounts for more of the joint job content-education variance in the highly educated population, and none of this joint variance in the elementary school educated population. We note that education has a relatively larger effect on "life outside the job" for those who have more education. The relative impact of education is proportional to its duration (as is its absolute impact, of course). For highly education individuation the effect of education could be expected to be more important:* they have spent more of their lives in the classroom and less on the job (perhaps a dozen years more). For workers with less time at school, however, the job itself may be the classroom.

One presumed advantage of formal education (at least a "liberal" education) is that it provides the breadth of exposure to alternative cultural patterns and broad preparation for multi-faceted "self-realization" in leisure time. Our findings support this claim for formal education, but expand it to include the "educational impacts" of work. If the work environment is the location of the educational process, the enhancement of leisure activity that occurs due to the "generalized educational process" will only be successful to the extent that the work environment de-emphasizes "passive" work that is emotionally undemanding and intellectually restrictive, and encourages "active" tasks involving psychological challenge and use of judgemental capacity. One social implication of such findings is that the tests that are posed for the educational system of a modern democratic society should also be posed for its work environments: can they serve as the educational basis for meaningful participation in the social decision making process; and can they serve as a training ground for self-growth and competence either on the job or outside.

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* This is consistent with our finding on p.244 that for workers of high education, education accounts for more of the observed work-leisure variation than it does for low education workers.

Income

The strong colinearities between disposable income, wage and job content and their empirical associations with leisure participation lead us to question to what extent the work-leisure associations of Chapter 4 are really the result of income or wage. The job content effects observed do fit the model of "psychological functioning." To resolve the question of which measures and which theories best predict leisure participation, we must now ask the question of whether the income or wage effects fit the economic theories involved. The theory implicit in the regression analysis (p. 273) is that leisure increases with economic resources, as it does for other status variables.*

A Review of Economic Findings and Theories

The first comment is that the laws of consumer demand (Ferguson, 1972; Dusenberry, 1949; Fisk, 1964) applying to leisure generally deal with the quantity of goods or services purchased, not the decision to participate. Although economic theories might very well be applied to answer the question of how much leisure of each category is purchased at each income level,** we excluded this information in Chapter 4 by deciding to answer only the simplest question first.

In such case the economic theory might be restated to hold that "the probability of participation should depend on income because, whatever the quantity of leisure, the probability* that a worker will have money enough to purchase it will increase with his income." Political scientists such as Verba and Nie (1972) have also suggested other mechanisms: political participation increases with income because "centrality" and "stake" in the social rewards increase for economically powerful individuals** Rainwater and Rein (1976) also discuss the importance of economic status for the general allocation of social resources. Furthermore, the variations of leisure activity with income in Diagram 5-4*** appear too interesting to neglect.

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*Fisk, Leisure Spending Behavior (1964) finds that Engels' Law holds for majority of recreation expenditures (expenditure total and proportion rise with income—cross-sectional). This is not true for some "goods" (movies, beer) but it is true for magazine purchases (in our Mass Cultural Leisure). The relationship also begins to fail at the highest income levels because of older age and smaller families .

**And each price, of course.

One simple theory is a "barrier" or hurdle theory. There is a fixed fee for entry to a leisure activity, and without resources for that one is excluded from deriving benefit altogether. Once the entry fee can be paid resources have no further predictive power. Either form of theory would predict that the poorest workers would show substantially lower leisure participation rates, but that at higher income leisure participation rates should level out. Unfortunately this does not occur in our data.

We do not have data on the prices of leisure, and most economic theories would certainly require this information. We observe, however, that each category of leisure activity appears to have at least some activity that costs almost nothing* (although some are clearly more expensive overall). We might claim that the prices were "equal" with respect to the simple decision to participation-at-all. If we make this strong assumption we find several leisure activities that display peculiar behavior (Ferguson, 1972, pp. 51-70) because their frequency drops or reverses as income increases:

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*Assuming that quantity implies a "random" distribution of expenditures.

**The most typical "instrumental" causal path for political participation is traced through social status, including not only income but other, less economic, prestige benefits. Individuals of high status in the social system are more likely to gain or lose the benefits they enjoy on the basis of political decisions, while the large mass of low status individuals remain only marginally above a "subsistence" existence—which is never raised, whatever the politics. Milbrath, op. cit., p. 18.

***Similar for wage.

1) None of the activities shows a strong drop or cutoff at low income (or wage; see Table 5-1).
2) Mass Cultural Leisure declines with increasing income (for wage it displays a slight "U"-shaped function **).
3) Evening Social Leisure and Active Physical Leisure drop with increasing income at intermediate level, and later increase. They display a "U"-shaped function.

For one category of goods, known as "inferior goods," the quantity demanded decreases as income increases.*** "Luxury goods" are substituted

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*As an estimate:

	Suburbanite	Intell. Cosmopol.	Evening Social	Mass Cult.	Relig. Particip.	Active Physical
Low Price	Gardening Organizns.	Read book Study circle	Movies Dance	Magaz. Window shop.	Religious org. Temp. org.	Fish
Med. Price	Hobbies Sewing Carpentry	Music Theater, exhib. (Restr.)	(Restr.)			Hunt Sports org.
High Price	Visit sum. cottage	Foreign travel		Auto trips		

**Actually there is very little variation until the highest income level. Mass Political Activitydrops at the highest level of income.

***Ferguson, op. cit., p. 51.

for "essentials" (butter replaces margarine). Mass Cultural Leisure, which displays such a drop (not included in the regressions), is probably a "low price"* leisure alternative with respect to magazines and window shopping, but not for "auto trips." It is certainly more expensive than religious activity (or political activity) and probably no "cheaper" than reading, gardening or going to the movies. Our theory of "psychological functioning" does explain why the association between occupation and Mass Cultural Leisure operates like an inferior good:** it is a "passive" participation category.*** This is an element of "taste" for the good.

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*Another source suggests "inferior good" behavior. Clarke, Alfred, "The Use of Leisure and its Relation to Levels of Occupational Prestige," American Sociological Review, 1955, p. 301. He finds that for a wide range of commercialized amusements (theatrical plays, movies, bowling, billiards, tavern, dancing, sports observations) attendance varies inversely with occupational prestige level (which is highly correlated to income).

**Fisk concludes that there is very strong evidence that occupation affects leisure expenditure independently of income and age. He does not explain, however, why this occurs (beyond "reference groups"). To do that is the purpose of this thesis.

(p. 127)	Income Elasticity ($1000-7500), 1950	
	Recreation	Reading
Salaried, Prof., etc.	2.1	.5
Clerical, Sales	1.5	.3
Skilled Wage	1.2	.5
Semi-Skilled Wage	1.5	.6
Unskilled Wage	1.8	.8

***With respect to the job content theory it must be admitted that Mass Cultural Leisure does also present some "U"-shaped associations. However, the general association is as predicted, and neither Evening Social Leisure nor Active Physical Leisure displays the same scale of irregularities. Also other activities at the top of the "scale of active leisure" do appear (as predicted) to embody high levels of intellectual discretion, and perhaps energetic engagement as well. The overall variations are usually rather linear (r^2 = .68, p. 194).

There is no "a priori" reason for presuming that Evening Social Leisure or Active Physical Leisure should be "normal" goods at some high income and an "inferior good" at low income.* However, the leisure activity effects for all activities at the top of the income distribution are perfectly consistent with a "simplistic view" of economic prediction (income up, consumption up). Also, the probably higher priced leisure activities: Intellectual Cosmopolitan Leisure and Suburbanite Leisure, are more frequent at higher income as the theory would predict. While the "U"-shaped curves of Active Physical Leisure and Evening Social Leisure may imply rather unusual behavior in economic terms, we cannot reject the possibility that these two activities (both very age-dependent) display their variations because of a "U"-shaped, age-dependent relationship between income and "actual" purchasing power that depends on family formation costs (Boalt, 1965; Fisk, 1964).**

Other Aspects of Economic Theory

An alternative economic theory advances the concept of the utility of time usage. The most common theme in this related economic literature is the discussion of the trade-off between work time and leisure time.***

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* It is theoretically possible to postulate a set of indifference curves that would imply this behavior; but it is not so easy to understand why it would be commonplace.

**Fisk, op. cit., p. 86:

After Tax Income Elasticities for Total Recreation
By Income, Occupation, Age of Head

Income Class approx. 1950	Salaried, Prof.		Cler. & Sales		Skilled Wage		Unskilled Wage	
	25-35	45-55	25-35	45-55	25-35	45-55	25-35	45-55
$3000	2.6	-	4.0	2.4	1.1	.9	1.9	2.6
4000	1.0	1.9	1.8	1.3	.9	3.8	1.7	1.0
5000	.8	1.4	1.2	1.1	1.1	.7	.8	1.5
6000 +	2.1	-	-	1.5	1.4	.1	.6	*

***There is a long history of debate on the most basic question of whether higher wages would lead to higher or lower hours worked. Kreps, Juanita, Generally this perspective is not relevant to our research because it does not address the question of what different kinds of leisure activity might be pursued. Indeed, it postulates a homogeneous measure of the individual's overall "utility" for leisure in order to predict how many hours a week he would "prefer" to work.

However, a fruitful expansion of the "utility in leisure" direction is discussed by Stuart and Chapin (1972), and to some extent by Staffan Linder (1970). They suggest that utility in leisure is produced by mixing the optimal qualities of time and money: if there is too little money to buy the simplest tools for leisure (magazines, hobby kits, skis) then utility will be severely restricted. This theory would predict that the utility benefit of additional increments of income for leisure should diminish at high incomes (diminishing marginal productivity of this factor in producing "valuable" leisure), especially since time is a relatively fixed commodity.

Our findings do not show a "low end cutoff" effect. Suburbanite leisure comes closest but even here participation increases almost linearly

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(1968). If individuals were free to choose hours of work, wages per hour might locate the individual on a particular "time-utility of leisure" indifference curve. (Mabry, Bevars, "Income-Leisure Analysis and the Salaried Professional," Industrial Relations, 1968, p. 162.) A wage rate is hard to calculate or define when income is fixed and hours are variable as in the case of many professionals.

with income. The most common pattern is that of a spurt at the upper end of the income distribution. The latter occurs for intellectual cosmopolitan activity, mass cultural activity, variations in leisure and religious organizational leisure. Such behavior is consistent with a "luxury good" description of leisure, but many of the activities do not fit such a description (Fisk, 1964). There seems to be little confirmation of the "cutoff" or "marginal leisure-utility production" theories.

A Generalized Concept of Utility and a "Job Selection" Theory

A third alternative theory that might be considered is an "economic man" theory of general behavior. It is a variant on the economic perspective in which a "utility"* is assigned to all aspects of the relevant sphere of choice and then a "cost benefit" calculation is used to select the choice of maximum benefit. Such a theory fails (more clearly than the conventional economic analysis above) to explain the work-leisure correlations as "high and low price" life choices of workers starting from different resource positions.

We begin by assigning utilities to different kinds of job content. If high job stress is considered a cost or disutility, along with low job freedom, then indeed the summation of utilities predicts mental health "costs" of work, and poor workers would select, as predicted, the "poor" jobs. However, the leisure activity results are not predicted: high cost jobs in terms of high stress with high benefits in terms of freedom of discretion—a zero total in the utility framework—in reality is associated with the most active leisure. In cost benefit terms, "active" jobs are indistinguishable from low stress-low job freedom ("passive") jobs. The "rational economic man" model cannot predict the main work-leisure findings.

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*The greatest scope claimed for the validity of such analysis is found in the work of Gary Becker ("A Theory of the Allocation of Time," Economic Journal, September 1965, pp. 500-505), where the income-leisure trade-off is incorporated as a special case of a more general theory of choice.

Another aberration is that presumably, workers who take poor jobs would be compensated for this disutility by high wages. Wages, in reality, do *not generally* compensate for poor working conditions. Psychological job demands are compensated, but physical job demands are not. In addition, jobs with the lowest freedom of action or intellectual challenge are also the most poorly paid.

There is one model of behavior that could explain the high income "spurt." Thorstein Veblen in *The Theory of the Leisure Class* postulates the theory of conspicuous consumption. Leisure decisions reflect a game of reference group "one-upmanship" for the purpose of confirming elevated social positions.* This behavior might be more common among those whose high incomes could sustain much purchasing activity.

Summary

Without data on prices of the leisure categories,** or quanitites of activity consumed, we cannot pass judgement on an economic theory of leisure behavior. We would be tempted to simply suggest that economic theory did not apply in the areas of the "participation decision" were it not for the expanding use of economic and utility theory to explain social behaviors (Becker, 1965). After making the necessary (but questionable) expansions of the theory, we must conclude that the overall increase of active leisure with income and wage is consistent with demand theory, but that the form of this increase and several exceptions which occur (for evening social leisure, active physical, and possibly mass cultural leisure) cast doubt on the ability of demand theory to explain all of the work-leisure association from Chapter 4.

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*The theory would predict that individuals may define their class membership by the package of leisure activities they can afford to engage in. In addition, an individual who feels he is "falling behind" members of this reference group or who would like to join a higher status group may be motivated to devote much of his free time to instrumental "catching up": moonlighting, or adult education. Although this theory of class membership could account for our findings, one could not measure it in detail without knowledge of the individual's specific reference group aspirations—not available in our data.

**Not to mention a poor distribution of intervals on the income and wage scales.

We must reiterate that the true value of the economic theories of leisure consumption have not been assessed in our analysis. The value of consumer demand theory to predict a full range of important information about "levels" and prices of leisure goods and services, however, will require more detailed data on the quantities and prices of activities than the Swedish data includes. The final verdict may be that economic theories of "how much" and "what price" can be supplemented with new information on "whether" and "what quality"* by further exploring models of "social-psychological functioning." Relating work activity to consumption behavior in this manner may dispel some of the mystery surrounding the concept of "tastes" (Dusenberry, 1949, p. 17).

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*Of course, one component of "quality" is its "expense" (a chain restaurant vs. the Ritz). We are instead interested in what Verba and Nie call the "pure tendency to participate": a behavioral orientation predicted by mechanisms of social-psychological functioning. We lose variance on the level of participation.

e. Summary of Status Variable Findings

The overall implication of these findings is that while income and status do have a major impact on leisure activity patterns, characteristics of job content or job-induced psychological processes (not summarized by status) have an independent effect. We are not alone in this finding. Kohn and Schooler (1973) observe that while several important correlations with "psychological functioning" diminish* when controlled for income and status, many correlations are unaffected, and all remain significant. They conclude that it "seems clear that the relationships between occupational conditions and psychological functioning do not simply reflect income and status." Meissner's study also shows significant work-related leisure differences for workers of exactly the same status and income level. The differences in leisure for Parker's bank tellers and social workers can also not be accounted for by their almost equal status,** and Young and Willmott find uneven status effects.***

The conclusions are the same for other researchers who have begun with the hypothesis that "income" predicted lifestyle behavior, and were forced ultimately to resort to "other causes" and unspecified psychological attitudes. Goldthorpe (1969) found that newly "affluent workers" whose job retained their conventional working class (auto assembly) job content did not change their lifestyles outside of work. Verba and Nie (1972) find that the original relationship between S.E.S. and political participation drops from .37 to .16 when "attitudes" (civic orientations, p. 21, p. 134) are partialed out.*

---

*Occupational commitment, job satisfaction, parental valuation of self direction, intellectually demanding use of leisure time.

**NORC prestige scores 1963-1965: social worker = 50, bank teller = 46-50. However, Goldthorpe (1974): bank teller = 40, social worker = 61.

***Young and Willmott, Symmetrical Family, 1973, find that active sport is highly class related, but other generalizations are hard to draw (organization attendance is more common also).

The job content model has the advantage of simultaneously predicting both leisure activity participation and mental strain, something that family income, wage, education or social class, as presently measured, cannot do. We present therefore a theory of social stratification that is multidimensional rather than linear and which can appear to account for a greater range implication of "man's relationship to his means of production," than the conventional concepts used alone.

The primary finding is not that job content is a "better" indicator of leisure behavior than the social status variables, but that the job content model extends the explanation that can be attributed to occupation, to a portion of the social hierarchy where education, the Swedish social class measure, family income and wage are not successful predictors.** The greatest utility of the job content model comes when these new dimensions are combined with the conventional status indicators to predict life outside the job. In the table below we see that for several leisure behavior categories a combination of job content and income or education can differentiate workers into population groups where participation rates differ by up to 70%.

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*Verba and Nie also discuss another non-instrumental correlate of political participation, "psychological proclivity to participate," but do not relate it to occupation.

**There have always been important reasons for not emphasizing divisions within the working class, of course. In this analysis it is assumed that the political "costs" of the finer discrimination would be more than offset by benefit from the study of jobs, which in a progressive political climate of Sweden, could lead to improved working conditions benefiting the working class.

Table 5-13: Non-Participation Rates for "Low-low's" vs. "High-high's"
("Passive" job content and low status vs. "active job content and high status)

	Education + Job Content		Family Income + Job Content		Social Class + Job Content	
	LOW	HIGH	LOW	HIGH	LOW	HIGH
Active Leis. Composite*	53%	22%	53%	23%	53%	18%
Intell, Cosm.	58	8	60	13	58	6
Active Phys.	44	30	40	27	48	29
Even. Social	42	18	20	26	37	17
Suburbanite	56	13	73	16	57	11
Relig. Organ.	65	41	73	41	67	40
Mass Cult.	60	72	47	66	58	73
Glad. Polit.	78	10	87	15	83	11
Mass Polit.**	-	-	-	-	-	-
Leis. Varia.	[illegible]	4	40	10	37	6

*Logit adjustment incorporated

**The conventional status measures do not predict Mass Political Activity in a simple manner.

5-6 Summary of Findings About "Alternative Hypotheses" and Job Socialization Effects

We must state at the outset that the lack of longitudinal data and laboratory controlled experimental environments prevents us from claiming conclusive "causality" for the work-leisure associations. However, by exploring alternative hypotheses we have hoped to considerably reduce the range of other explanations that could be evoked to account for the findings in Cnapter 4. A diagramatic summary of Chapter 5 is presented in Diagram 5-3. It should be noted that all of these relationships have not been tested similtaneously , but we can discuss groups of findings (a summary discussion of the "carryover - compensation" and the job content model is in section 4-4):

A. Individual Background and Personality

Education (as a measure of background or individual orientation) does not appear to account for the work-leisure associations. The effects of job content on leisure activity remain strong for a large group of workers who all have similar educations (elementary school only). A family education measure (parents, siblings) displays a similar effect.*

The Swedish data does not contain conventional personality inventory data to test the work leisure associations. The data does contain measures of childhood life experience, which according to the "life-stress" literature, are useful predictors of individual response to environmental situations (in terms of mental strain and behavior patterns).

Our study confirms the importance of such an experientially-based measure of "personality". The childhood problem scale has a significant impact on the work-leisure associations (and a stronger, consistent impact on the mental strain indicators). However, in no case does controlling for this "personality" measure eliminate the job content effects. It does define what appear to be "sensitive" and "less-sensitive" subpopulations.

B. Job "Socialization" vs. Aging and "Personality FulFillment (Via Job Selection)

This must be considered the "weak link" in our attempt to confirm the job content effects. We have no longitudinal data to reject several alternative dynamic hypotheses that could account for the work-leisure associations. "Aging" by itself cannot account for the effects and we can generally exclude income dynamics and some "life cycle" effects, but "maturation" processes related to "job selection" remain a problem. Nevertheless, we do find suggestive evidence for "job socialization". The relationship between the content of work and leisure activities and mental strain increases as the exposure to the job increases:

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*in preliminary test only

a. Workers with longer job experience have much stronger work-leisure associations than workers who have just started their careers and these leisure patterns are correlated, in the hypothesized manner, with the content of their present jobs. This effect does not disappear when controlled for measures of individual background that might motivate "personality and job selection."*

b. Full-time workers have approximately double the work-leisure relationships found for part-time workers (among women).

Nevertheless, we do find that some of the observed relationships can only be accounted for by "background, personality, or job selection". Although the analysis cannot be considered precise in this stage, our estimate that about 35% ** of the observed association is due to these factors is consistent with Kohn and Schooler's findings that the effect of the job-on-the-man (in psychological functioning) is about double the effect of the man-on-the-job in cross-sectional samples.

C. Community and Social Relationships

These variables do not appear to "account" for the work-leisure associations. The impact of urban scale is small within the non-rural Swedish population.

Visits with friends and visits with relatives both have important effects on the work-leisure associations. Friendship displays a strong, but independent impact on leisure participation. Associations with relatives do not display such strong linear relationships with leisure activity; but they display significant and complex, interactive impacts on the work-leisure associations. Activities which represent formal participation in community institutions (elite and mass political participation, religious organizations) are less strongly affected by job content when the "web of kinship" is strong.

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*While "job mobility process" could still account for these findings, the mobility mechanism would have to be a substantially restricted one. Workers would have to make some inconsistent choices, and the mobility pattern observed could also not be strongly related to family social background, own education, social class, or problematic events during childhood.

**Preliminary tests only

D. Status: Social Class, Family Income, Education

The status variable may "account" for a significant part of the work-leisure associations, at high status (high family income, high social class, high education), but the high colinearity makes it difficult to be certain. However, at lower and middle status level, we can establish clearly that the work-leisure associations are not a "spurious" effect of social status. The work-leisure associations retain 78% of their uncontrolled strength within the elementary education population. Within the lower four deciles of family income they retain 78% of their strength. Using multivariate regressions in the full sample population, job content accounts for 70% of the joint income-job content effects; and 53% of the joint education-job content effects.

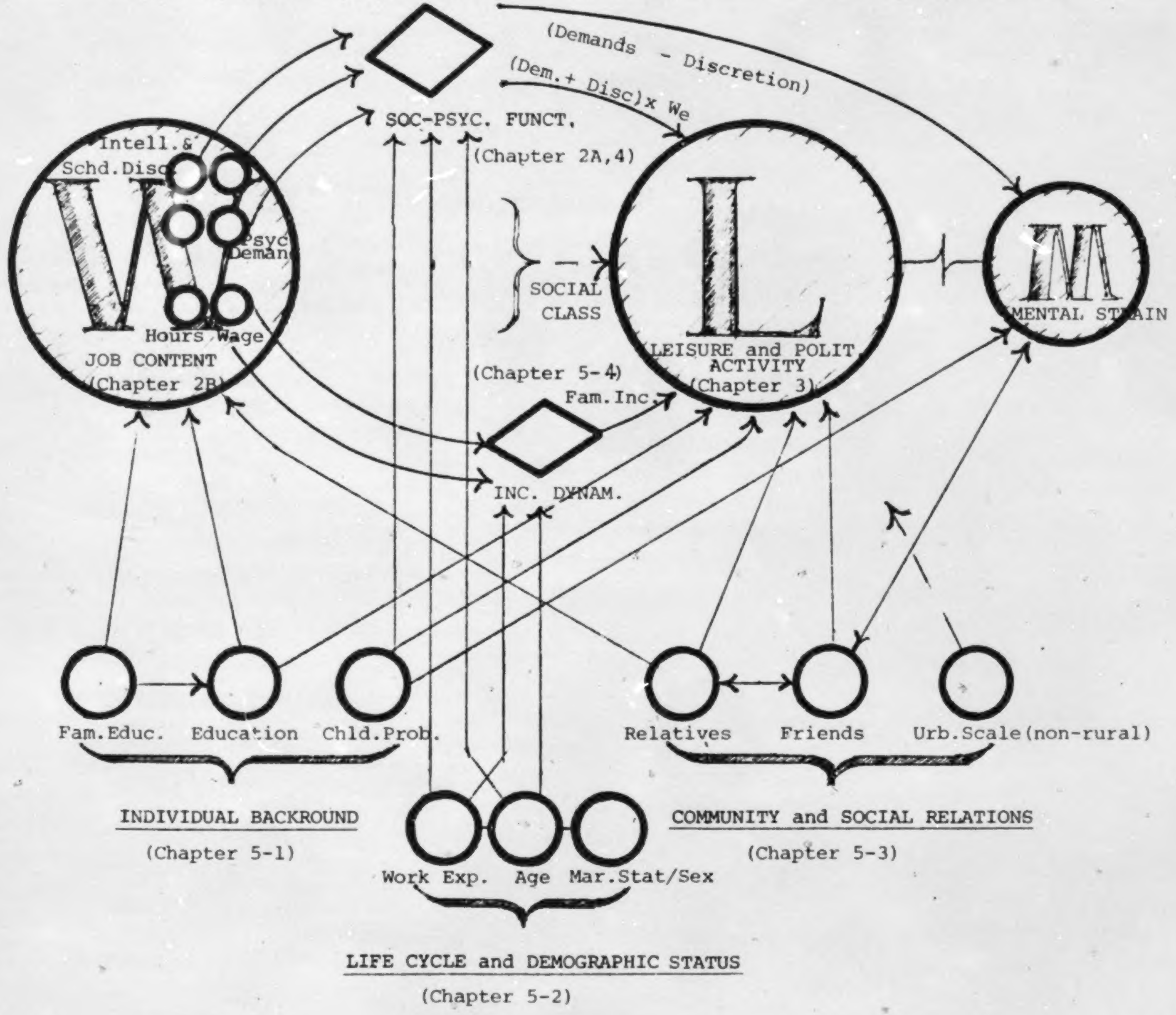
The work-leisure associations retain 61% of their strength within the "working class". However, there is evidence to indicate that the job content measures are simply a more detailed manner of describing the essence of occupational social class.

It is our opinion that the social and psychological implications of work experience are generally considered too "changeable" or too "individual" to serve as a basis for major social policy action. Thus it has been our goal to bolster the evidence for the importance of such effect by testing a model of job content which describes how activity patterns outside the job are "socialized" and mental strain generated at the work place. We do find cross-sectional evidence of such effects in a broad national population survey, and can therefore "echo" the positive conclusions of Kohn and Schooler (1973):

> "We argue that the relationships between occupational conditions and psychological functioning [leisure behavior in our case] result from the interplay between the job and man, in which the effects of job on man are far from trivial."

Chapter 5 also shows that other factors account for substantial variation in the observed relationships. However, the mechanisms by which "income", "personality", "community relationships" and "education" connect the job and life outside the job are substantially different than those of

Diagram 5-3: SUMMARY MODEL OF THE JOB CONTENT-LEISURE ASSOCIATIONS AND SUPPLIMENTARY HYPOTHESES


(Demands - Discretion)
(Dem.+ Disc)x We
SOC-PSYC. FUNCT.
(Chapter 2A,4)
Intell.&
Schd.Disc
Psyc
Demand
Hours
Wage
W
JOB CONTENT
(Chapter 2B)
SOCIAL
CLASS
L
LEISURE and POLIT
ACTIVITY
(Chapter 3)
M
MENTAL STRAIN
(Chapter 5-4)
Fam.Inc.
INC. DYNAM.
Fam.Educ.
Education
Chld.Prob.
Relatives
Friends
Urb.Scale(non-rural)
INDIVIDUAL BACKROUND
(Chapter 5-1)
COMMUNITY and SOCIAL RELATIONS
(Chapter 5-3)
Work Exp.
Age
Mar.Stat/Sex
LIFE CYCLE and DEMOGRAPHIC STATUS
(Chapter 5-2)

the job content model. Because the mechanisms differ, the "policies" which would be selected as corrective actions also differ. It is our conclusion then that policy designed to improve the quality of life and working life must concentrate on, or at least not avoid, the social and psychological qualities of the job itself.

5-7 Practical Implications of the Conclusion

One paradox* often observed in the literature about the effects of the work environment is alluded to by Quinn, Seashore, Kahn, et al., in their analysis of the nationally representative U.S. Survey of Working Conditions—1971:

> A major paradox of this study was that workers in higher status occupations were more satisfied than others with their jobs, were more mentally healthy, but at the same time experienced greater emotional tension concerning the events occurring on their jobs. Conversely, workers totally free of labor standards problems were not always among the most satisfied, since many of their jobs lacked the quality of self developing challenge that appeared to be a major determinant of high job satisfaction.

Our model emphasizes that job demands (or "stress") are not equlivalent to mental strain. High job freedom may allow the worker to cope with stress on the job and thus experience less strain as the outcome. Our main finding is that workers with high job discretion also have high participation in leisure activities involving clear exercise of judgment and individual choice. If such behavior is an element of "satisfaction," then the expanded "range of discretion" on the job is the reason why high status workers experience both job "stress" and high job satisfaction.

If our hunch is correct that "activity level" is an element of job

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*Another Use: Resolving Paradoxes in Organization Theory: Analysis of basic differences in "job content" can account for some of the discrepancies in the predictions of organization theory. Our synthesis of Weber, Gouldner, and Crozier's observation is that if the organization does operate as Weber's Bureaucracy is supposed to (with reduced "tensions" or challenge and low freedom of action) then the job would lead to passive patterns of behavior in and outside of work (Merton's "bureaucratic personality"—1968). If, however, the rules either become more restrictive (Gouldner, 1954), or the level of job demands increases (Crozier, 1964), then the job tends toward "Heavy Work" which is associated with increased levels of "strain" on workers, and in the organization as a whole.

"satisfaction," then we also have a clue why undemanding and unchallenging work can be associated with low satisfaction. We have found that low job demands in conjunction with low job discretion are associated with markedly reduced participation in "societally involving" leisure and political activity.

The joint conclusion is that low job discretion is not likely to lead to satisfactory "life-outside-the-job," with any combination of psychological job demands.* The worker will face a Hobson's choice of "mental strain" on the one hand or "passive participation" on the other (Wilensky, 1960). However, increased job discretion is simultaneously associated with increased activity levels and reduced strain symptoms. What type of job discretion is important? The possibilities are numerous and our study does not allow precise enough discrimination to prescribe automatic on-the-site job enrichment decisions. We have clearly found that "task" discretion (related to level of skill application and lack of monotony) has a more significant impact than schedule discretion (related to informal pauses in the work routine), although increased levels of both types of job discretion have generally positive effects.**

There is but one further inconsistency to be resolved in our "moderately complex" picture (see Table 4-6) of work environment correlates. Even a "leisurely" job (high discretion and few job demands) can be associated with "problematic" outcomes from the societal perspective (if not the individual's own view).* Participation in some protest political activities (connected in our findings with "oppressive" high strain occupational conditions) is lower than for any other job category. If the "utopia" of enriched work for everyone does not come about by accident (a good bet), then there may be little social impetus to bring it about if the strategy of job change toward "leisurely" work is selected.

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*For a discussion of physical job demand impact, see Chapter 4-2.

**We have observed that the highest levels of schedule discretion are associated with some increase in mental strain probability. No adverse effects are associated with increased "task" discretion—at any level.

In general this study not find evidence for "suspension of the work ethic" or restriction on demanding (and challenging) jobs. Indeed, the lack of demanding work may be associated with "passive" participation and some types of political indifference, as well as obvious consequences for the level of production. It is when demanding work is accompanied by low job discretion that the probability of mental strain increases drastically and the "costs" of heavy work must be addressed. A related implication is that public policy which has "job creation" as the goal must emphasize "challenging" and "taxing" opportunities, and avoid "leaf-raking" or obvious "make-work" positions.

The optimal combination seems to appear when high job discretion accompanies challenging work. Indeed such situations may encourage the most productive employment as well.** Our findings show evidence of newly acquired activity patterns in leisure for individuals with "active" work; perhaps learning on the job is also enhanced.

The "Costs" of Job Enrichment

It is not clear what long term "costs" would be encountered by well-selected job enrichment strategies, if jobs are not necessarily made less productive in the process. The relative distribution of authority and control in the work place would be subject to change, of course, and this might provoke resistance on the part of those who retain the "social-psychological benefits" of work at present (Davis and Taylor, 1975). However, there is no evidence that "job discretion" is a zero sum quantity (like economic rewards). Indeed several researchers have found that "total control experienced" by all employees over their work appears to increase in participatory work organizations (Rus, 1970,p.154; Tannenbaum, 1968, Obradovic, French, Rodgers, 1970).

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*Leisurely jobs are associated with the lowest overall probabilities of mental and psychosomatic strain, and moderately high levels of leisure activity.

**Such an investigation has not been undertaken in this study.

Changes in the content of work could have significant macro-economic consequences as well. If further research confirms a "causal" connection between job content and leisure behavior,* then "consumption preferences" -- at least for leisure-related goods and services -- should no longer be considered an "exogenous" component of economic models and forecasts. Purchase of a "service" is consumption of the most literal kind; it is the "experiencing" of the activity pattern (the sport, the play) that is the consumption. Once the leisure activity is experienced it is indeed "consumed."** It is not implausible that "preference" for an activity pattern in related to the "habit" of having experienced similar activity in the past, thus it should not be surprising that preferences at leisure for consumption of leisure service and service related goods would be related to behavior patterns at work.

If "active" behavior patterns at work lead to increased leisure

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*Another condition is that further research must demonstrate that the findings hold for the quantity of leisure activity as well as the simple decision to participate. For a somewhat disparaging observation see p.

**Service consumption may be more closely related to job content than consumption of goods, which often reflects a (permanent) investment of economic resources rather than a repeated behavior pattern (Scitovsky, 1976).

"service consumption," then active work could lead to positive economic consequences for a post-industrial society (Bell, 1973) such as Sweden or the United States where employment in the "service" sector* is over 50%. The level of service employment (overlapping to communications, education, organizational activity) in an underemployed "post-industrial" economy could increase to meet the increased demand. Could the increased level of "active" work and demand for leisure service be a self-sustaining trend? The implications of our findings below is, possibly yes.

An aggregate of active leisure participation (first unrotated factor) indicates substantially higher leisure service consumption by workers in the broadly defined "service" industries (Gov't Administration, communications, Health, Education, Welfare, entertainment) than in the "production" industries** (manufacturing, processing, construction). Over 61% of workers in the production industries have below average participation rates, versus 48% in the service industries.*** We explain these industry level findings **** on the basis of the different composition of the industries in terms of active and passive workers and the work-leisure relationships in Chapter 4. Of the jobs in the broadly defined "service" industries 26%

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*Service employment (total employment minus "goods" and agriculture). Fuchs definition: service = trade, finance, government, but not transportation (included in our "service" category) nor public utilities (Fuchs, 1965 —N.B.E.R.) For our industry category definitions see Appendix.

**By these definitions the service industries account for 35% of Swedish non-rural employment and the "production" industries 41%.

***Commercial workers occupy an intermediate position, 57% heavily automated, capital-intensive "process" industry workers have the second lowest rate, 62%; construction industry workers, 67% .

****These effects do not appear to be attributable to the following characteristics of workers in the "service" industries, at least in Sweden: female oriented (which implies somewhat lower leisure rates); slightly younger (which implies higher leisure rates); slightly more high income families (which implies higher leisure rates). High wage construction workers have lowest leisure participation rates.

are "active" in terms of definitions above; only 15% of the workers in the broadly defined "production" industry category are. Within the "production" sector only 9% of working individuals in the process industries* (all upper and middle level status) have "active" jobs. Since there are more "active" jobs in service industries, the job behavior experienced by new workers in these industries should accelerate the demand for active leisure services.*

Our finding should be considered as suggestive rather than conclusive. There do show consistent trends in outside-the-job behavior related to the content of work for a national population sample using cross-sectional, individual level data. Further longitudinal and experimental job site research would of course be needed to establish the "causality" of and detailed implications of these broad findings. Such as research agenda could lead to several types of rewards. Analysis of social-psychological aspects of consumption preferences in the past has led to an expanded understanding of economic behavior (for example,Due senberry, 1949, and savings behavior). Understanding of the dynamic linkages between job content and leisure behavior could illuminate and help alleviate heretofore neglected "costs" borne by workers in some types of jobs. Such linkages could also be used to inform the positive goals of promoting a new economic equilibrium for a post-industrial society -- based on self-perpetuating** patterns of high service consumption. Such societal level "benefits" merely supplements the vast improvements in satisfaction that might be experienced by the individual during the working day, and complete the picture of the potential impacts of enlightened changes in the work environment on the quality of modern life.

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* Offsetting effects could of course occur through wage differences, goods consumption, etc. , and would have to be researched.

** The overall effect of national policies which promoted job enrichment might stimulate further employment through a "psychodynamic multiplier" effect.

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BIOGRAPHY

Robert Allen Karasek Jr.

I was born in Ft. Wayne Indiana in 1944, and raised in St. Louis, Missouri. I received my undergraduate education at Princeton University, and have graduate degree in architecture from the University of Pennsylvania, and a masters degree from M.I.T.

Two related themes can be distinguished in my "intellectual biography" to date. During the last five years I have pursued a doctoral program in sociology in which the broad focus of my study has been the occupational structure in advanced industrial society, and its impact on patterns of behavior and social organization. In addition to a classical exposure to the study of modern organizations, the family, and community structure; my curriculum has included several fields not normally covered. I have studied those elements of economics which specifically relate to the occupational structure and its dynamic changes. I have also focused on the integration of sociological and psychological models of behavior that can describe the individual in the setting of the complex organization, the family or the small group.

That second phase of my intellectual development began in Sweden. During my Fulbright year there, I investigated the emerging interest in "meaningful work experience," as it was expressed in connection with new town development outside of Stockholm. I came to feel that incorporation of these new orientations toward work could mean major changes in the problems posed for, and the theories relevant to the current social sciences. In this manner my new area of interest evolved out of an earlier background in the sociological aspects of urban planning and architecture. That earlier experience had emphasized the relationship between the physical environment and patterns of behavior; and focused specifically on issues in housing system design and housing policy, and community participation patterns.

Appendix A -1

Table 1: Job Content Dimensions The overall accuracy of the Guttman scales insures the approximately cumulative interpretation for each position. (The average error level is about 10%).	Percentage of Working Population Non-Rural Sweden 1968 (n = 2392)
I. Job Demands	
A. Psychological Job Demands	
1. Non-hectic job	26.3%
2. Hectic job	41.3
3. Hectic and psychologically demanding	22.4
4. Hectic, demanding, and psychologically exhausted at end of work day	9.9
B. Physical Job Demands	
1. Not exposed to any of 5 physical stressors (lifting 125 lbs., other physical demands, outdoor/non-normal temperature, dampness, dirty work)	45.9
2. Exposed to one stressor	24.3
3. Exposed to two stressors	13.0
4. Exposed to three stressors	7.9
5. Exposed to four stressors	8.8
II. Job Discretion	
A. Intellectual Job Discretion	
1. Job is monotonous/repetitious and typical job "skill level"* is statutory minimum education	15.7
2. Typical "skill level" only elementary education (not monotonous/repetitious job)	45.0
3. Typical "skill level": 1 to 4 years additional education (not monotonous/repetitious job)	21.5
4. Typical "skill level": 5 to 7 years additional education (not monotonous/repetitious job)	10.9
5. Typical "skill level": some university education (not m/r.)	6.9
B. Personal Schedule Freedom	
1. Unable to make a phone call during the work day	8.0
2. Can make a phone call	21.0
3. Can receive a visitor for 10 minutes	30.4
4. Can leave work for a ½-hour errand without supervisor's permission	21.0
5. Employer is not overly concerned with punctuality or time schedules	19.7
III. Institutional Job Status Guarantees	
1. No institutionally guaranteed wage or job protection (small group contract, piece rate, tips)	9.9
2. Fixed hourly wage or right to one month's notice	16.2
3. Fixed hourly wage and right to one month's notice	17.7
4. Fixed weekly or monthly salary	35.7
5. Other employee(s) under authority	19.1
6. Own business with over 5 employees	1.4

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*As measured by each worker's estimate of the education of a typical worker with that job.

APPENDIX

TABLE 2 JOB CONTENT DISTRIBUTION BY INDUSTRY, CLASS

	INDUSTRY BRANCH*								SOCIAL CLASS		
	Mass Processing	Manufacturing	Construction	Commerce (& Transport)	Administration	Direct Service	Farming**	GRAND TOTAL	Social Class		
									I	II	III
PSYCHOLOGICAL JOB DEMANDS											
1. Non-hectic	28.0	23.4	26.7	24.3	32.5	24.2	31	26.3	15.8	22.7	31.3
2. Hectic	40.0	41.5	48.4	43.2	34.4	39.7	51	41.3	25.6	38.2	46.8
3. Psychologically demanding	22.0	24.1	19.9	23.3	22.5	22.7	17	22.4	36.3	28.2	15.1
4. Psychologically exhausting	10.0	11.0	5.0	9.1	10.6	13.4	1	9.9	22.2	10.9	6.7
PHYSICAL JOB DEMANDS											
1. Not exposed	41.0	45.8	14.5	44.1	71.4	52.5	18	45.9	80.3	61.3	27.0
2. One stressor	22.7	26.7	13.6	29.5	13.9	32.2	19	24.3	13.7	20.5	29.5
3. Two stressors	19.7	11.6	19.5	11.9	5.6	12.7	19	13.0	3.0	8.8	18.4
4. Three stressors	7.3	10.8	19.9	6.9	4.7	1.9	14	7.9	1.7	4.5	11.8
5. Four or five	9.3	5.2	32.6	7.7	4.4	0.6	30	8.8	1.3	4.9	13.3
INTELLECTUAL JOB COMPLEXITY											
1. Only elementary and monotonous	26.0	18.5	9.0	13.3	11.4	13.8	23	15.7	3.8	5.8	26.0
2. Only elementary and not "	47.0	46.7	55.2	57.2	28.1	35.0	55	45.0	5.6	36.5	59.3
3. One to four years "	14.0	20.4	26.2	20.2	32.2	19.7	16	21.5	12.4	34.8	12.7
4. Five to seven years	8.7	9.9	7.7	6.4	18.9	14.9	4	10.9	28.2	18.3	1.7
5. Some university " "	4.3	4.5	1.8	2.9	9.4	16.6	2	6.9	50.0	4.6	0.3
PERSONAL SCHEDULE FREEDOM											
1. No phone call	10.0	8.4	5.9	9.1	4.4	8.6	9	8.0	3.8	4.8	11.3
2. Phone call	26.7	23.2	13.6	15.2	19.7	25.3	23	21.0	13.2	16.3	26.2
3. Receive a visitor	33.7	34.4	29.4	29.1	30.8	28.3	18	30.4	13.2	29.8	34.1
4. 1/2-hour errand	19.0	16.8	28.5	22.9	26.1	17.5	18	21.0	35.0	22.0	17.4
5. Employer not concerned	10.7	17.2	22.6	23.7	18.9	20.3	33	19.7	34.6	27.1	11.0
INSTITUTIONAL JOB STATUS PROTECTIONS											
1. None: Tips,piece rate, small contr.	17.7	19.1	25.8	4.2	1.1	1.7	5	9.9	2.6	1.0	18.4
2. Fixed hourly or one month	25.7	24.3	24.4	13.9	5.0	8.6	19	16.2	2.4	5.2	27.8
3. Fixed hourly and one month	17.7	16.6	18.1	21.6	8.9	19.7	28	17.7	9.4	11.0	24.4
4. Salary	19.7	25.8	18.6	36.2	55.3	48.2	37	35.7	28.6	49.4	26.3
5. Supervisorial authority	17.7	12.9	11.8	21.6	28.3	21.4	12	19.1	52.1	31.2	3.0
6. Own business	1.7	1.3	1.4	2.5	1.4	0.4	0	1.4	5.1	2.2	0.0
NUMBER OF RESPONDENTS	300	465	221	481	360	463	88	2392	234	956	1202

(Ave figures + 2% for 1% confidence)
For a 1% confidence interval the error brackets are ± 1/8 to 1/16 of the stated percentage for n = 90, 250 respectively. i.e.,if n=140 and figure=18%, error=±1.8%

* For definition see Chapter , page

** Farm and forestry workers are highly underrepresented (non-rural population). Also 10% of individuals have missing data in this category.

APPENDIX

TABLE 3 JOB CONTENT DISTRIBUTION BY INDUSTRY BY SOCIAL CLASS

SOCIAL CLASS by INDUSTRY BRANCH

	Mass Processing		Manufacturing		Construction		Commerce (& Transport)		Administration		Direct Service		Farming*		TOTAL (I + II) Mgr. and White Collar	TOTAL (III) Working Class	GRAND TOTAL
	I & II	III	I & II	III	I & II	III	I & II	III	I & II	III	I & II	III	I + II	III			
PSYCHOLOGICAL JOB DEMANDS																	
1. Non-hectic	17.4	34.0	17.3	27.7	29.9	25.3	20.3	28.7	26.8	46.6	19.1	30.8	22.6	40.8	21.3	31.3	26.3
2. Hectic	37.6	41.4	27.7	51.1	17.9	61.7	40.6	46.1	35.4	32.0	36.3	44.3	58.5	42.9	35.7	46.8	41.3
3. Psychologically demanding	30.3	17.3	39.3	13.5	43.3	9.7	27.5	18.7	25.7	14.6	28.2	15.4	17.0	16.3	29.8	15.1	22.4
4. Psychologically exhausting	14.7	7.3	15.7	7.7	9.0	3.2	11.6	6.5	12.1	6.8	16.4	9.5	1.9	0	13.1	6.7	9.9
PHYSICAL JOB DEMANDS																	
1. Not exposed	66.1	26.7	68.6	29.9	38.8	3.9	56.6	30.4	83.7	40.8	66.8	33.8	24.5	12.2	65.0	27.0	45.9
2. One stressor	16.5	26.2	20.4	31.0	16.4	12.3	25.1	34.3	10.1	23.3	24.0	42.8	15.1	22.4	19.2	29.5	24.3
3. Two stressors	11.0	24.6	5.8	15.7	16.4	20.8	9.2	14.8	2.3	13.6	6.9	20.4	18.9	20.4	7.6	18.4	13.0
4. Three stressors	2.8	9.9	3.1	16.1	11.9	23.4	4.4	9.6	1.9	11.7	1.9	2.0	17.0	10.2	3.9	11.8	7.9
5. Four or five	3.7	12.6	2.1	7.3	16.4	39.6	4.8	10.8	2.0	10.7	0.4	1.0	24.5	34.7	4.2	13.3	8.8
INTELLECTUAL JOB COMPLEXITY																	
1. Only elementary and monotonous	1.8	39.8	4.2	28.5	0	13.0	8.4	18.7	2.3	34.0	5.3	24.9	24.5**	20.4	5.4	26.0	15.7
2. Only elementary and not	31.2	56.0	34.0	55.5	28.4	66.9	44.6	70.9	22.2	42.7	18.3	56.7	50.9	61.2	30.4	59.3	45.0
3. One to four years	31.2	4.2	30.9	13.1	44.8	18.2	30.3	9.1	37.7	18.4	22.1	16.4	15.1	16.3	30.4	12.7	21.5
4. Five to seven years	23.9	0	20.4	2.6	20.9	1.9	11.6	0.9	24.5	4.9	25.6	1.0	5.7	2.0	20.3	1.7	10.9
5. Some university	11.9	0	10.5	0.4	6.0	0	5.2	0.4	13.2	0	28.6	1.0	3.8	0	13.5	0.3	6.9
PERSONAL SCHEDULE FREEDOM																	
1. No phone call	1.8	14.7	2.1	12.8	1.5	7.8	6.4	12.2	1.9	10.7	7.6	10.0	13.2**	4.1	4.6	11.3	8.0
2. Phone call	19.3	30.9	12.6	30.7	9.0	15.6	8.8	22.2	18.7	22.3	21.0	30.8	20.8	24.5	15.7	26.2	21.0
3. Receive a visitor	28.4	36.6	29.8	37.6	11.9	37.0	24.7	33.9	30.0	33.0	28.6	27.9	11.3	24.5	26.6	34.1	30.4
4. 1/2 hour errand	30.3	12.6	24.1	11.7	31.3	27.3	23.5	22.2	29.6	17.5	19.1	15.4	13.2	22.4	24.5	17.4	21.0
5. Employer not concerned	20.2	5.2	31.4	7.3	46.3	12.3	36.7	9.6	19.8	16.5	23.7	15.9	41.5	24.5	28.6	11.0	19.7
INSTITUTIONAL JOB STATUS PROTECTIONS																	
1. None: Tips, piece rate, small contr.	0	27.7	1.6	31.4	0	37.0	1.6	7.0	1.6	0	1.1	2.5	3.8	6.1	1.3	18.5	9.9
2. Fixed hourly or one month	4.6	37.7	6.8	36.5	4.5	33.1	6.4	22.2	1.6	13.6	3.1	15.9	11.3	26.5	4.6	27.9	16.2
3. Fixed hourly and one month	8.3	23.0	12.0	19.7	11.9	20.8	14.3	29.6	5.4	17.5	9.9	32.3	20.8	34.7	10.6	25.0	17.7
4. Salary	35.8	10.5	46.6	11.3	41.8	8.4	35.5	37.0	52.5	62.1	50.8	44.8	49.1	24.5	44.8	26.4	35.7
5. Supervisorial authority	46.8	1.0	29.8	1.1	37.3	0.6	37.5	4.3	37.0	6.8	34.4	4.5	15.1	9.2	34.9	3.0	19.1
6. Own business	4.6	0	3.1	0	4.5	0	4.8	0	1.9	0	0.8	0	0	0	2.7	0	1.4
NUMBER OF RESPONDENTS	109	191	191	274	67	154	251	230	257	103	262	201	53	49	1190	1202	2392

(Ave. figures + 2% for .01 confidence)
For a 1% confidence interval the error brackets are ± 1/8 to 1/16 of the stated ercentage for n=90,250 respectively. i.e., if n=140 and figure = 18% error = ±1.8%

* Farm and forestry workers are highly underrepresented (non-rural population).** Also 10% of individuals have missing data in this category; Self employed have Assigned data

APPENDIX

TABLE 4 JOB CONTENT DISTRIBUTION BY LIFE CYCLE VARIABLES

	SEX		SOCIAL CLASS BY SEX						SEX by WORKING HOURS				AGE			URBAN SCALE		
			Class I		Class II		Class III		M		F							
	Total Men	Total Women	Male	Female	Male	Female	Male	Female	Part Time*	Full Time (1800 hrs./yr.)	Part Time*	Full Time (1800 hrs. per year)	YOUNG WORKERS 18-30	MIDDLE AGE WORKERS 31-50	OLDER WORKERS 51-66	LARGE URBAN AREA	OVER 30,000 Pop.	UNDER 30,000 Pop. (Non-Urban)
PSYCHOLOGICAL JOB DEMANDS																		
1. Non-hectic	24.4	29.5	16.4	13.7	19.6	26.7	29.7	33.8	40.7	22.6	37.8	21.8	30.0	21.8	29.9	24.8	27.9	27.0
2. Hectic	40.3	42.9	23.0	35.3	34.3	43.3	49.0	43.4	37.9	40.6	43.7	42.1	46.7	39.7	38.1	38.4	41.3	45.3
3. Psychologically demanding	25.2	18.1	36.6	35.3	34.6	20.0	15.5	14.6	14.3	26.3	11.9	23.9	16.4	27.5	20.7	24.4	22.2	20.1
4. Psychologically exhausting	10.2	9.5	24.0	15.7	11.5	10.1	5.8	8.3	7.1	10.5	6.5	12.2	6.9	11.1	11.4	12.4	8.6	7.6
PHYSICAL JOB DEMANDS																		
1. Not exposed	37.9	58.6	83.6	68.6	50.0	76.0	17.9	41.8	43.6	37.3	56.8	60.4	48.6	46.4	42.4	48.8	46.7	41.3
2. One stressor	20.1	31.0	9.8	27.5	22.0	18.5	21.3	42.7	15.7	20.6	32.7	29.5	23.9	23.9	25.6	22.5	25.3	25.9
3. Two stressors	15.6	9.1	3.3	2.0	12.0	4.6	21.1	13.9	15.7	15.5	8.8	9.3	12.3	13.3	13.4	12.0	13.4	14.1
4. Three stressors	12.1	1.3	1.6	2.0	7.2	1.0	18.2	1.5	15.7	11.7	1.8	0.8	9.1	7.3	7.6	16.7	14.5	18.7
5. Four or five	14.3	0.0	1.6	0.0	8.7	0.0	21.5	0.0	9.3	14.9	0.0	0.0	6.1	9.2	11.0			
INTELLECTUAL JOB COMPLEXITY																		
1. Only elementary and monotonous	12.8	20.7	2.2	9.8	4.1	7.9	21.7	32.9	17.1	12.3	26.1	15.1	15.7	14.9	17.1	14.0	15.7	18.1
2. Only elementary and not	45.3	44.4	4.9	7.8	38.5	33.9	60.2	58.0	37.1	46.2	47.5	41.5	38.6	43.8	54.0	42.1	46.3	47.6
3. One to four years	22.0	20.7	12.0	13.7	34.6	35.1	15.3	8.5	26.4	21.6	14.6	26.3	29.3	20.3	15.0	23.9	20.7	19.1
4. Five to seven years	11.9	9.4	30.1	21.6	18.7	17.8	2.4	0.4	12.1	11.8	8.1	10.6	10.8	12.3	8.7	20.1	17.3	15.1
5. Some university	8.0	5.1	50.8	47.1	4.1	5.3	0.4	0.2	7.1	8.1	3.6	6.4	5.6	8.7	5.4			
PERSONAL SCHEDULE FREEDOM																		
1. No phone call	6.0	11.1	2.2	9.8	2.0	8.4	9.8	13.7	6.4	6.0	11.7	10.6	6.0	8.6	9.2	25.0	32.1	31.5
2. Phone call	16.8	27.6	9.3	27.5	9.4	25.2	24.0	29.8	12.9	17.2	32.2	23.2	19.7	22.1	20.6			
3. Receive a visitor	30.3	30.5	13.7	11.8	25.6	35.3	37.8	28.1	30.7	30.2	24.3	36.1	35.6	29.0	27.0	31.2	29.7	29.7
4. 1/2 hour errand	23.3	17.2	38.8	21.6	24.8	18.3	18.4	15.7	17.9	23.9	14.4	19.7	22.7	20.5	19.8	22.3	20.4	19.6
5. Employer not concerned	23.6	13.6	36.1	29.4	38.1	12.7	10.0	12.6	32.1	22.7	17.3	10.2	16.0	19.9	23.6	21.5	17.8	19.1
INSTITUTIONAL JOB STATUS PROTECTIONS																		
1. None: Tips, piece rate, small contr.	13.1	4.8	2.7	2.0	1.3	0.7	24.2	8.7	12.1	13.2	4.7	4.8	11.1	9.4	9.2			
2. Fixed hourly or one month	18.6	12.4	1.6	3.9	5.9	4.3	32.0	20.7	20.0	18.5	17.8	7.5	15.4	16.2	17.2			
3. Fixed hourly and one month	14.8	22.5	9.8	7.8	8.1	14.7	20.9	31.2	17.9	4.5	32.9	12.9	17.9	17.4	18.3			
4. Salary	28.3	47.4	25.7	39.2	41.7	59.4	19.2	37.5	38.6	27.2	40.1	54.1	44.3	32.4	31.7			
5. supervisorial authority	23.3	12.4	54.1	45.1	39.8	20.0	3.6	2.0	10.0	24.7	3.8	20.3	11.3	23.1	20.7			
6. Own business	1.9	0.5	6.0	2.0	3.1	1.0	0.0	0.0	1.4	2.0	0.7	0.4	0	1.5	2.7			
NUMBER OF RESPONDENTS	1466	926	183	51	540	416	743	459	140	1326	444	482	700	1059	633	996	663	733

(figures ± 2% for .01 confidence)
For a 1% confidence interval the error brackets are ± 1/8 to 1/16 of the stated percentage for n = 90, 250 respectively, i.e., if n=140 and figure=18%, error=±1.8%

* Part time work average 20 hrs/wk. (1 to 1800 hrs. work during previous year.)

APPENDIX

TABLE 5 RELATED DIMENSIONS OF WORK

	JOB INSECURITY			UNION AFFILIATION				CONTRACT FORM (employed only)				GRAND TOTAL
	Ever Unemployed In Last 5 Years	3 Jobs (+) in Last 18 Months	Anticipate Losing Job in Near Future	No Union	L.O. (Blue Collar)	T.C.O./S.A.L.F. (White Collar & Fore)	S.A.C.O./S.R. (University Educated & High Public Off.)	Work Group Contract	Piece Rate, Tips, Bonus, etc.	Fixed Hourly Wage	Salary, Weekly or Monthly	GRAND TOTAL
PSYCHOLOGICAL JOB DEMANDS												
1. Non-hectic	22.8	22.2	28.6	31.9	25.9	20.3	16.0	20.6	19.4	36.3	24.9	26.3
2. Hectic	50.9	57.2	39.8	38.2	49.2	32.2	35.1	62.7	49.1	43.8	36.3	41.3
3. Psychologically demanding	16.7	14.8	13.3	21.1	17.4	32.8	31.3	9.1	20.5	14.2	26.8	22.4
4. Psychologically exhausting	9.6	5.6	18.4	8.8	7.5	14.8	17.6	5.8	11.0	5.7	12.0	9.9
PHYSICAL JOB DEMANDS												
1. Not exposed	28.9	35.2	35.7	55.3	23.4	71.7	66.4	8.4	30.0	35.7	59.1	45.9
2. One stressor	23.2	16.7	18.4	24.4	28.7	17.6	16.8	22.6	33.7	28.2	20.4	24.3
3. Two stressors	15.4	14.8	20.4	10.2	20.0	5.3	6.9	25.2	13.6	15.3	10.4	13.0
4. Three stressors	14.5	16.7	12.2	5.7	12.[illegible]	3.7	3.8	17.4	11.0	10.1	5.2	7.9
5. Four or five	18.0	16.7	13.3	4.4	15.6	1.6	6.1	26.6	11.7	10.7	4.8	8.8
INTELLECTUAL JOB COMPLEXITY												
1. Only elementary and monotonous	21.9	20.4	17.3	15.9	23.0	3.5	6.1	25.8	29.3	18.8	11.1	15.7
2. Only elementary and not	53.1	52.4	40.8	44.6	59.4	23.4	16.8	66.0	46.9	63.2	39.0	45.0
3. One to four years	19.7	16.7	25.5	23.1	14.8	35.0	11.5	7.1	16.8	13.1	26.2	21.5
4. Five to seven years	4.4	1.9	6.1	10.9	2.3	26.6	18.3	1.3	5.9	3.9	16.4	10.9
5. Some university	0.9	3.7	10.2	5.6	0.4	11.5	47.3	0	1.1	0.9	12.3	6.9
PERSONAL SCHEDULE FREEDOM												
1. No phone call	10.1	3.7	11.2	6.2	11.4	4.7	4.6	9.7	11.4	13.1	5.3	8.0
2. Phone call	22.8	22.2	20.4	15.2	27.1	19.9	15.3	28.9	25.6	27.1	19.4	21.0
3. Receive a visitor	32.0	44.4	37.8	21.8	36.4	37.1	13.7	45.2	26.7	34.8	33.0	30.4
4. ½-hour errand	15.8	20.4	18.4	29.0	16.5	25.0	23.7	16.3	18.7	15.3	27.7	21.0
5. Employer not concerned	19.3	9.3	12.2	32.7	8.6	13.3	42.7	0.7	17.9	9.6	14.6	19.7
INSTITUTIONAL JOB STSTUS PROTECTIONS												
1. Group contract, piece rate, tips	21.9	22.2	20.4	4.0	19.9	1.0	3.1	62.0	44.3	0	0	9.9
2. Fixed hourly or one month	23.2	22.2	20.4	13.3	27.8	1.6	3.8	34.9	41.0	46.4	0	16.2
3. Fixed hourly and one month	18.9	20.4	24.5	23.4	22.2	4.3	4.6	3.1	14.7	49.9	10.4	17.7
4. Salary	30.7	27.8	25.5	38.5	23.8	53.7	33.6	0	0	3.7	57.5	35.7
5. Supervisorial authority	5.3	7.4	9.2	17.4	6.2	39.3	50.4	0	0	0	32.1	19.1
6. Own business	0	0	0	3.4	0.1	0	4.6					1.4
NUMBER OF RESPONDENTS	228	54	98	774	979	468	131	155	273	457	1265	2392

see footnotes previous table

Appendix Table -6 (These calculations to be recomputed without * variables)

I. Job Demand Factor Analysis for Young Male Workers (n = 247)

	Physical Job Demands	Psyc. Job Demands (& No Breaks)	Physical Exhaust. Work	Job Insecurity	?
Heavy Lift	.54	.11	.03	.13	-.03
Dirt	.70	-.06	.03	.17	.16
Danger. Substan	.55	.03	-.05	-.06	-.01
Vibration	.55	.00	.07	-.24	-.13
Noise	.62	.05	.05	.01	.36
Outdoor/Temp.	.56	-.01	.11	-.22	.09
Dampness	.56	.02	-.06	.10	-.09
Smoke, Gases	.65	-.15	-.11	.27	.25
Other Phys. Dem.	.36	-.09	.35	.04	-.12
Physically Exhaus.	.20	-.07	.63	.18	-.06
Hectic	.19	.24	.21	.00	.16
Psyc. Dem.	-.14	.61	.06	.27	-.12
Psyc. Ex./aft.Wk.	-.07	.39	.32	.42	.02
Job Insecurity	.01	.02	.05	.47	-.03
Vacations	.03	-.42	.14	.04	.05
Rest Breaks	-.15	-.38	.07	.11	-.19
*Time Stamp	.18	.01	-.02	.07	.64
*Night Work	.20	.14	-.12	-.14	.01
*Schedule Freedom	-.14	-.04	.22	.09	.15
*Past Unemploy.	.01	.02	.05	.24	-.03
*Sweaty	.57	.12	.44	.02	-.03

II. Job Demand Factor Analysis for Older Workers (n = 333)

	Physical Job Demands	Psyc. Job Demands	?	?	?
Heavy Lift	.60	-.06	-.01	-.09	-.03
Dirt	.78	-.13	.02	.00	.03
Danger. Substan.	.40	.03	.27	-.21	.00
Vibration	.33	.05	.15	.10	.03
Noise	.54	.01	.13	.34	.18
Outdoor/Temp.	.63	.06	-.05	-.05	.02
Dampness	.58	-.06	-.05	-.24	-.01
Smoke, Gases	.63	-.01	.28	.13	-.01
Other Phys. Dem.	.60	.00	-.36	.21	.09
Physically Exhaus.	.35	.31	-.12	.17	.07
Hectic	.12	.42	-.06	-.05	.05
Psyc. Dem.	-.23	.58	.09	-.17	.05
Psyc. Ex./aft.Wk.	-.07	.52	.07	-.03	-.09
Job Insecurity	.05	-.01	-.06	.09	-.13
Vacations	.21	.02	.03	.29	.08
Rest Breaks	-.05	-.05	.07	.40	-.08
*Time Stamp	.21	-.08	-.10	.21	.84
*Night Work	.01	.30	.34	.02	.03
*Schedule Freedom	.21	-.11	-.05	.44	.09
*Past Unemploy.	.12	-.12	-.12	.16	-.19
*Sweaty	.66	-.03	-.16	.21	.03

*These variables should not have been included in this factor analysis. Time Stamp and the Schedule Freedom scale should be removed because they are Job Discretions, instead of Job Demands. A "sweaty job" should be removed as too physiologically dependent. The "unemployment experience" variable should be removed since it referred to a characteristic of the individual.

APPENDIX 3:TESTING FOR CONSISTENCY OF LEISURE PATTERNS

Factor analysis of leisure time activities in subpopulations defined by age and sex and by social class.

Introduction

In this section we change our focus from leisure patterns in the whole population, to patterns of leisure within six subdivisions of the Swedish population between ages 15 and 75:

Men:	15-29	Women:	15-29
	30-54		30-54
	55-75		55-75

Our motivation for examining the differences between subpopulations has been to test that the patterns of leisure are constant. In the process of testing for the consistency of leisure pattern in subgroups of the population we find systematic differences in leisure activity by age and sex interesting in themselves.

Sex role differences are easier to confirm with our data than changes due to aging. We have only cross-sectional data so we can not rule out the hypotheses that differences between age groups are due to historical or generational changes, instead of the process of aging within the individual.

A compact statement of the theory of the life-cycle's impact on leisure has been advanced by Rhona and Robert Rapoport who speak of "career development" in leisure:

> Each strand of life experience—work, family and leisure interests—may be thought of as having a semi-autonomous career of its own. Each career strand...is formed on the anvil of

> critical status transitions...changes in jobs, interests, moves of home, getting married.

How does this affect our leisure pattern concept? A "leisure interest ...with a semi-autonomous career of its own" is not inconsistent with our intrinsic tendencies in leisure behavior—with a time dimension added. We could then speak of evolving patterns of leisure, dependent on the process of aging, and still distinguish from externally induced combinations of activities. Family life cycle influences—dependent as they are on socially defined child rearing and family formation roles—remain "outside causes."

Do leisure patterns change or are they constant? We can summarize the findings from these six factor analyses as follows:

a) The factors are least clearly defined in the youngest age group. They are more sharply defined for both sexes with advancing age, lending support to the hypothesis that individuals become "more set in their ways as they grow older." Intuitively plausible factors appear in all of the subpopulations, but these patterns approach greater analytical clarity in middle age.

b) There are significant sex differences in the systematic changes that occur between age groups. Women's patterns show significant change between youth and middle age, while men's leisure patterns change less. Entering old age, there is a reconvergence of leisure patterns between the sexes, although men's combinations of leisure activities appear to change more than women's. Analysis of frequency tables of leisure activity participation changes reveal different findings: men's frequency of participation changes more than women's from the 15-29 age group to the 30-54 age group. This confirms our earlier suspicion that the combination of leisure activities represents a fundamentally different type of information than frequencies of participation. More detailed investigations would be necessary to show to what degree differences between male and female leisure patterns were due to the differential impact of family responsibilities.

c) In spite of the interesting differences, it must be stated clearly that roughly similar factors emerge from all of the subpopulations factor analyses. In all cases a separate factor appears for activities with friends, activities with relatives, and participation in various forms of organizations. In most subpopulations factors representing basic content differences in leisure also appear: physical activity, cultural and socializing pursuits.

Other studies of leisure behavior by age and sex

The Washington, D.C., study concludes that life cycle position and sex have relatively little impact on the categories of discretionary time (although employment effects are distinguished from "pure sex role differences"). Several specific impacts of life cycle on leisure time allocation are noted, however:

a) "The crucial factor for family activity participation is stage in the life cycle—depending on the age of the youngest child. There are not comparable differences for non-family socializing activity, however." P. 143, ibid.

"For active recreation, hobbies, cultural activities, families with young dependent children have far lower rates, and families with older children far higher rates than the means for other stages in the life cycle." P. 152.

b) "In general there is no independent effect for the (life cycle) factor, but the factor is useful as a control because the effects of the other factors (income, race, sex, work time) tend to change from stage to stage." P. 199.

c) "The results of the tests for the four classes on discretionary activity did not support the crude sex role hypothesis. The greatest difference is in the amount of discretionary time that women have rather than what they do with it.... There was no significant differences between the sexes for the socializing, participation, or rest and relaxation variables.... The real differences come in obligatory activities." P. 203. i.e. (The full time employment variable closely correlated to sex leads to considerable variations.)

STATISTICAL APPENDIX: "LOGIT" CORRECTIONS AND WEIGHTING METHODS

A.) "LOGIT" CORRECTIONS FOR ASSUMPTOTIC DISTORTION IN PERCENTAGES

Outside a linear range of 25% to 75% corrections must be made if relative "Rates of Change" in percentages are to be compared by their numberical magnitudes. The currently accepted method (Theil, 1970; Davis, 1974) is to transform the percentage logarhythmically (Log of "the odds" $\frac{p}{(1-p)}$), and compare the magnitude of these differences. We have used these "LOGIT" corrections for all rate of change comparisons, averages, etc. (except where noted) in Chapters 4 and 5. Fortunately it is possible to transform the "LOGIT" by constants so that it is numerically similiar to a conventional percentage (±2% within the linear range) and at least recognizable as a "corrected percentage" outside the range.* This enhances interpretability of all the numbers and simplifies difference comparisons. Thus, if a (b_x) coefficient of 9.0 (scaled for the 50th percentile) implies a full scale variation of 36% (18% to 54%), the table below can be used to find the actual percentage implied when it falls outside the linear range (p' = 18%, p = 22%).

B.) WEIGHTING BY CELL SIZE AND "p" VARIANCE

Weighting is another problem for percentage analysis. Coleman (1964) argues that if the cell size is large there is no real reason to weigh different cells (by their "n"). If cell sizes are intermediate he suggests that weighting the percentages by the reciprocal of their cell variance $[\frac{1}{\sigma^2} = \frac{n}{P(1-p)}]$ is a reasonable method for estimating true accuracies (Theil concurs, 1970). Furthermore, we are not only interested in weighting for accuracy of variance estimates, but for accuracy in estimating the population rates of changes. In this case, each cell should be weighted simply by its "n."

---

*Of course these "corrected probabilities" conform to all the properties of "LOGITS," and thus can be over 100 or under zero, unlike regular probabilities.

From these three suggested weighting procedures we have selected the "variance weighted" method (in approximated form), since it is similar in magnitude to "n," unless "P" is very high or low (then it compensates for the large error that could be introduced when "LOGITS" are used in these ranges).

A weighting system can make regression computations difficult, so approximate weights are used in our computations. A base number of individuals (20 to 70) is used as "unit weight" and each cell is weighted according to the integral number of weight units if they reflect its size (these weights must be further adjusted for "P(1-p)" when percentages are outside the linear range). If percentages are small a small unit weight is chosen so the variance weighted adjustments can be accurately made. However, within the "linear range" units weights ranging from 1 to 5, were assigned to cells to perform regressions. A comparison of the actual cell size and "approximate-variance weighted" weights for a leisure activity within the linear range is shown in the footnote on page 186.

TABLE A -7

"CORRECTED PROBABILITIES P′"

(FOR USE IN RATE OF CHANGE COMPARISONS)

$$\left(p' = .5000 \pm \frac{\text{LOGIT}_P}{4.0000} \right)$$

P	(1-p)	"LOGIT"(P)*	P'	$(1-p)' =$	$(.5 + \frac{\text{LOGIT}}{4})$	ERROR IF P IS UNCORRECTED
.35	.65	.6190	.35	.65	(.6548)	1/2%
.34	.66	.6633	.33	.67	.6658	
.33	.67	.7082	.32	.68	.6771	
.32	.68	.7538	.31	.69	.6885	
.31	.69	.8001	.30	.70	.7000	
.30	.70	.8473	.29	.71	.7118	
.29	.71	.8954	.28	.72	.7239	1%
.28	.72	.9445	.26	.74	.7361	
.27	.73	.9946	.25	.75	.7487	
.26	.74	1.0460	.24	.76	.7615	
.25	.75	1.0986	.23	.77	.7747	2%
.24	.76	1.1527	.21	.79	.7882	
.23	.77	1.2083	.20	.80	.8021	
.22	.78	1.2657	.18	.82	.8164	
.21	.79	1.3249	.17	.83	.8312	
.20	.80	1.3863	.15	.85	.8466	
.19	.81	1.4500	.14	.86	.8625	5%
.18	.82	1.5164	.12	.88	.8791	
.17	.83	1.5856	.10	.90	.8964	
.16	.84	1.6582	.09	.91	.9146	
.15	.85	1.7346	.07	.93	.9337	
.14	.86	1.8153	.05	.95	.9538	10%
.13	.87	1.9001	.02	.98	.9750	
.12	.88	1.9924	.00	1.00	.9981	
.11	.89	2.0907	-.02	1.02	1.0227	
.10	.90	2.1972	-.05	1.05	1.0493	15%
.09	.91	2.3136	-.08	1.08	1.0784	
.08	.92	2.4424	-.10	1.10	1.1106	
.07	.93	2.5867	-.15	1.15	1.1467	
.06	.94	2.7515	-.19	1.19	1.1879	25%
.05	.95	2.9444	-.24	1.24	(1.2361)	

*from Theil, 1967,p.459 to 463.

APPENDIX A-5 Mental Strain Factor Analysis - Supplimentary Tables

A study of very serious mental pathology is not included in this analysis both because its origin may be dependent on factors outside our hypothesized causal mechanisms, and because such problems occur in very low frequencies. We select instead symptoms of mental strain with an incidence in the adult population of at least 5%.*

In the review of occupational mental health literature we noted a set of findings suggesting that the susceptibility to stress-induced mental illness might be affected by behavior patterns that represented different styles of coping with stress. This potential relationship between mental strain variables and behavioral patterns in leisure activity does not appear in a correlation analysis, however. Extracted dimensions in a joint factor analysis contain either leisure variables, or mental health symptoms, but not both.** Thus these two analyses are carried on independently, at least in the first stages of model building.

The model of mental disturbance in this study is that the interaction of job demands and job prescribed freedom of action determines "residual strain" from the work place, which in turn causes mental health symptoms outside the job. This is a considerably simpler process than another recent model (Caplan et al., 1975), in which a broader set of variables are considered measures of mental strain (including job satisfaction and several behavior patterns). Mental strain is, there, viewed as an intervening variable to predict physical illness (morbidity, mortality, and accidents). Although the work stress-mental strain relationship is well documented, the mental strain-physical illness linkage is not.*

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*Generally 10%; occasionally a lower frequency measure is included if highly correlated to other variables.

**It should be noted, however, that we postulated the linkage as a dynamic one which would not necessarily lead to a correlation. Mental symptoms represent the "state" of unresolved strain, whereas behavior patterns measure the "rate" of coping with stress.

We use two groups of physical health symptoms in the mental strain analysis. The first group includes physical symptoms related to job stress in the literature or highly correlated to the main mental strain indicators of tiredness, sleeping problems, and depression anxiety in a large factor analysis. These include aches and pains in back and extremities, stomach problems and high blood pressure-dizziness. Another group of "purely physical" illness was defined by separating the mental strain and potentially psychosomatic symptoms out of an original list of 48 physical illness symptoms, and utilizing only "severe" symptom reports.** Even this purely physical health dimension is substantially correlated to all of the mental strain factors. This suggests that either mental strain is significantly affected by physical ill health, or that mental strain manifests its effects as physical illness as well. Six Varimax factors account for

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*Caplan et al. in further research expect to test the multivariate model, which would appear necessary to confirm these further mechanisms.

**The list of symptoms was altered in several respects from the original list of "health" problems in the Swedish questionnaire. All the responses of only "moderate" physical problems were discounted. In addition, the potentially "psychosomatic" indicators, which are used as dependent variables, were excluded. "Severe problems within the last twelve months":

1. Colds
2. Poor vision (even with glasses)
3. Poor hearing
4. Bronchial cattarrh/asthma
5. Goiter
6. Tuberculosis
7. Heart attack
8. Heart weakness
9. Gall trouble
10. Kidney trouble
11. Piles
12. Urination trouble
13. Menstrual trouble (women)
14. Pregnancy (women)
15. Hypogastium trouble
16. Inguinal hernia
17. Varicose veins
18. Leg swelling
19. Blood swelling
20. Cough
21. Psychosis (very few)
22. Breathing difficulty
23. Sickness feeling
24. Loss of weight
25. Vomiting
26. Diarrhea
27. Constipation
28. Eczema
29. Cancer
30. Anemia
31. Diabetes
32. Overweight
33. Organic nerve disease

51% of the common (33% of the total) variance in 16 self-report measures of mental strain (and pill consumption) and psychosomatic physical illnesses.*

1. General Tiredness: unusual tiredness, during day, in morning, or at night
2. Sleeping Problems: sleeping problems, or consumption of sleeping pills
3. Depression: depression, anxiety or nervousness; consumption of tranquillizers.
4. High Blood Pressure, Dizziness**(a low frequency factor)
5. Aches and Pains: aches or pains reported in lower back; shoulder or upper arms; hands or lower arms

The U.S. data samples***include quite comparable self-report measures of mental health problems and isolate many of the same overall dimensions. The Caplan study also includes composite indicators of "irritation, job dissatisfaction, and boredom." Several variables included as mental strain indicators in our factor analysis of the Swedish data are considered final, physical health outcomes in the U.S. study (aches, pains, "psychological problems"): Depression,**** Anxiety,**** and Somatic Complaints (including dizzyness, and upset stomach).

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* Two correlated variables, headaches and aspirin consumption, were omitted as not highly correlated to the others.

**Several measures that would have allowed comparative analysis with much current literature occurred in too low a frequency to allow multivariate analysis (heart attacks, for example). We have, however, included the higher frequency correlates of this illness (such as high blood pressure, dizziness) which were related significantly to other mental strain symptoms.

***Caplan, op. cit.

****Both correlated to each other and to "tense, confused, tired for no reason."

Apenndix Table A -8: Mental Strain Factor Analysis
Sweden Male workers (non-rural) 1968 n=1466

Varimax Rotated Factors

	SLEEPING PROBLEMS	HEADACHES, ASPRIN	ACHES & PAINS	DEPRESSION, ANX., TRANQUIL.	TIREDNESS	DOCTOR VISITS "OTHER" MEDIC.	HIGH BLOOD PRES. DIZZYNESS
	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4	FACTOR 5	FACTOR 6	FACTOR 7
Morning Tired	0.07155	0.22651	0.12164	0.11421	0.31420	0.09413	0.06800
Day Tired	0.08289	0.11074	0.12958	0.14075	0.66453	0.16550	0.14826
Evening Tired	0.06921	0.03905	0.25581	0.10501	0.52574	0.07897	0.03923
Asprin, Pain Killer	0.10947	0.43951	0.09940	0.02165	0.09060	0.08163	0.03535
Tranquillizers	0.42253	0.02199	0.08751	0.40332	0.16032	0.24992	0.05222
Sleeping Pills	0.83398	0.07348	0.10600	0.12037	0.05366	0.09722	0.05585
Other Medicine	0.05774	0.01378	0.05224	0.03565	0.08574	0.57873	0.21272
Headaches	-0.00947	0.70955	0.05126	0.12961	0.03841	-0.03445	0.06050
Pain in Breast	0.10351	0.02138	0.20687	0.13065	0.10768	0.23537	0.06809
Pain in Upper Shoulder	0.12761	0.06948	0.53504	0.09244	0.09138	0.07734	-0.00660
High Blood Pressure	0.09902	0.04886	0.02083	0.01113	0.11910	0.26650	0.54511
Pain in Back	0.05060	0.07699	0.44452	0.08424	0.12192	0.06193	-0.06461
Swollen Legs (X)	0.01768	0.09522	0.37932	0.08095	0.14917	0.06099	0.30063
Pain in Hands, Arms	0.05352	0.08967	0.44747	0.09391	0.11151	0.10162	0.12546
Sleeping Problems	0.47712	0.10537	0.22593	0.30244	0.11271	0.05799	0.09054
Nervousness, Anxiety	0.17242	0.16513	0.13990	0.73528	0.13886	0.20966	0.05140
Depression	0.14580	0.08615	0.13490	0.58098	0.10020	0.01840	0.04094
Dizzyness	0.03112	0.22257	0.27193	0.18868	0.08312	0.13505	0.30176
Overstress	-0.01101	0.14007	0.17133	0.25592	0.21156	0.04637	-0.03844
Doctor Visits	0.11163	0.12860	0.19736	0.11337	0.10100	0.40880	0.09624
Ulcer, Stom. Probs.	-0.00036	0.26511	0.09392	0.15349	0.14028	0.29944	-0.20299
SeriousPhysical Illness (aggregate of 28 "non-psychosomatic" symptom reports)	0.01557	0.49396	0.34575	0.22589	0.20573	0.29209	0.10883

APPENDIX TABLES A4-1

Nine Cell Tables for Job Content Model Test -- raw frequencies (non-participation)
(For Format see 179, For Marginals see Table 4-2)
SWEDEN -- Male Workers (Non-Rural) 1968 n = 1,466

Psychological Job Demands by Intellectual Job Discretion

55.8% 29/51	51.2% 43/83	44.0% 22/50
43.3 84/194	42.1 130/311	33.8 52/154
39.3 42/107	27.0 50/185	19.1 60/310

Psychological Job Demands by Personal Schedule Freedom see p. 315

52.6% 50/93	49.6% 66/132	34.3% 35/102
36.3 41/112	39.4 80/202	27.3 35/127
43.5 64/146	31.4 77/245	22.2 64/285

1. "Suburbanite" Leisure

50.0% 26/52	42.9% 36/84	32.0% 16/50
41.2 80/194	42.1 133/316	36.4 56/154
15.5 17/110	22.0 42/191	11.5 36/314

41.1% 39/95	41.5% 56/135	31.4% 32/102
37.2 42/113	36.9 75/203	23.4 30/128
28.6 42/147	31.6 80/253	16.0 46/288

2. Intellectual Cosmopolitan Leisure

34.4% 18/52	33.3% 28/84	36.0% 18/50
35.5 69/194	37.0 117/316	39.6 61/154
16.4 18/110	20.4 39/191	22.6 71/314

34.7% 33/95	41.4% 56/135	40.2% 41/102
21.2 24/113	30.0 61/203	26.5 34/128
32.6 48/147	27.2 69/253	26.0 75/288

3. Evening Social Leisure

57.7% 30/52	52.4% 44/84	50.0% 25/50
57.7 112/194	56.0 117/316	61.0 94/154
50.9 56/110	54.5 104/191	65.9 201/314

86.3% 82/95	76.3% 103/135	82.3% 84/102
70.8 80/113	75.9 154/203	77.3 99/128
80.9 119/147	84.2 213/253	86.8 250/288

4. Mass Cultural Leisure

(cut off point differs)

65.5% 34/52	60.8% 51/84	62.0% 31/50
51.6 100/194	59.5 188/316	54.5 84/154
56.3 62/110	53.0 101/191	41.6 130/314

60.0% 57/95	66.7% 90/135	47.1% 48/102
59.3 67/113	59.2 120/203	46.1 59/128
49.0 72/147	51.4 130/253	48.0 138/288

5. Religious Organizational Leisure

Psychological Job Demands by Intellectual Job Discretion

46.2% 24/52	39.3% 33/84	26.0% 13/50
33.0 64/194	35.9 88/316	24.0 37/154
24.5 27/110	15.7 30/191	26.5 83/314

Psychological Job Demands by Personal, Schedule Freedom

34.7% 33/95	31.1% 42/135	24.5% 25/102
29.2 33/113	28.1 57/203	30.5 39/128
33.3 49/147	20.6 52/253	23.9 69/288

6. Active Physical Leisure

75.0% 39/52	60.7% 51/84	58.0% 29/50
63.4 121/194	53.2 168/316	39.6 61/154
41.8 46/110	36.7 69/191	22.8 71/314

65.0% 61/95	54.8% 73/135	42.2% 43/102
65.5 74/113	53.7 109/203	36.7 47/128
48.3 71/147	41.9 106/253	24.8 71/288

7. Elite Political Activity

48.1% 25/51	48.8% 41/82	30.0% 15/50
51.6 100/194	42.7 135/316	35.0 54/154
56.3 62/110	50.2 96/191	45.0 141/314

54.3% 51/95	35.5% 48/135	26.5% 27/102
45.1 51/113	43.8 89/203	32.8 42/128
57.8 85/147	53.4 135/253	49.0 141/288

8. Mass Political Activity

37.2% 19/51	38.1% 32/84	24.0% 12/50
38.9 75/194	30.0 94/316	18.8 29/154
28.4 31/110	24.3 46/191	12.6 39/311

40.8% 38/95	27.8% 37/135	14.7% 15/102
32.7 37/113	31.0 63/203	18.8 24/128
34.0 50/147	29.3 72/253	14.2 41/288

9. Total Political Activity (7 + 8)

38.5% 20/50	33.3% 28/81	28.0% 14/50
26.8 52/194	25.0 79/312	18.8 29/154
15.5 17/110	11.5 22/191	9.2 29/309

34.7% 33/91	26.7% 36/135	17.6% 18/102
22.1 25/113	24.1 49/203	16.4 21/128
21.1 31/147	17.4 44/249	11.5 33/288

10. Variations in Leisure

Psychological Job Demands by Intellectual Job Discretion

Psychological Job Demands by Personal, Schedule Freedom

32.7% 17/52	34.5% 29/84	64.0% 32/50
19.1 37/194	30.7 97/316	44.8 69/154
19.1 21/110	24.1 46/191	36.3 114/314

23.2% 22/95	29.6% 40/135	44.1% 45/102
19.5 22/113	33.0 67/203	36.7 47/128
21.1 31/147	25.3 65/253	42.7 123/288

11. General Tiredness

1.9% 1/52	9.5% 8/84	20.0% 10/50
3.6 7/194	7.3 23/316	13 20/154
4.5 5/110	5.2 10/191	10.5 33/314

2.1% 2/95	6.7% 9/135	11.8% 12/102
7.1 8/113	6.4 13/203	7.0 9/128
2.0 3/417	7.5 19/253	14.6 42/288

12. Sleeping Problems

17.3% 9/52	16.7% 14/84	34.0% 17/50
7.2 14/194	16.1 51/316	26.6 41/154
8.2 9/110	8.9 17/191	16.2 51/314

10.5% 10/95	15.6% 21/135	20.6% 21/102
8.8 10/113	15.3 31/203	13.3 17/128
8.2 12/147	11.9 30/253	24.7 71/288

13. Depression, Anxiety

40.4% 21/52	35.7% 30/84	44.0% 22/50
37.6 73/194	43.4 137/316	51.3 79/154
30.9 34/110	28.3 54/191	30.9 97/314

41.1% 39/95	36.3% 49/135	40.2% 41/102
34.5 39/113	40.4 82/203	34.4 44/128
33.3 49/147	35.6 90/253	39.2 113/288

14. Aches and Pains

11.5% 6/52	1.2% 1/84	14.0% 7/50
3.6 7/194	7.3 23/316	11.0 17/154
3.6 4/110	4.7 9/191	4.1 13/314

5.3% 5/95	5.9% 8/135	10.8% 11/102
2.7 3/113	5.9 12/203	2.3 3/128
6.1 9/147	5.1 13/253	8.0 23/288

15. High Blood Pressure, Dizziness